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Editorial Notes

Is Energy Necessarily Virtue?

THE Coal Utilisation Council has issued its Annual Report, the period covered being from April, 1938, to March of this year. It is a lengthy document, and the lay-out is not at all bad. It is imitative of Gas Industry publicity, while being reactive, and a trifle petulant. The *motif* of the front cover is good, without, however, being convincing to other than the advertising expert. We have, in this instance diagonally, the drum, drum, drum of insistent propaganda—either "It's part of the house that coal heats," or "She lives in the house that coal heats." And, of course, "she" is radiant. In happiness beyond mortal reason she hardly knows the bounds of decency. One of the coal propaganda pieces is either jejune or, perhaps, amusing. It is about "glowing coal," and the National Fitness Council has nothing on the C.U.C. regarding health through fire worship. This delectable poster is available in sixteen sheet and double crown sizes. The woman depicted is ecstatic. As a ballet dancer she stands in dressing gown rare, an ardent devotee of "glowing coal." Her feet, white (temporarily), stick out from exotic bedroom slippers. The health-giving radiance of "glowing coal"! Semi-divine she stands, in Marie Stopesian beatitude.

After which short comment on the cover of the C.U.C. Annual Report, let us face a vision or a fact or two, even a woman or two, we have encountered, in dream or in reality. Let us take dream first, and let us ask a direct and simple question. Throughout history, has elegant woman ever been wedded *by choice* to "chores"? Men with a spice of imagination and a minimum of culture do not like to see their wives' hands gnarled and filthy from use of one of the earth's dirtiest—albeit most potential—products, raw coal. Now, a glance at fact? An eminent doctor said recently within our hearing that the work involved in staggering with coal scuttles, playing like an aborigine with firewood, and messing about with a pile of ashes and wakening in the middle of the night to let in the sweep, kept women hearty, well, and supple. This eminent doctor was not, of course, inaugurating a gas conference. Nor—strange to relate—was he opening a coal convention; he was just expressing his views, as eminent doctors will and do.

But we have taken for many years another view. In our non-chivalrous moments we have seen women stooping with the raw coal scuttle and we know of women who have gained, through the use of raw coal, an unenviable—and wholly unnecessary—reputation for housemaid's knee, this being a description of a complaint derived from the times when housemaids were plentiful and also conciliatory. Whatever the C.U.C. imagines, times have changed. Alas to the propaganda of that highly efficient organization, housemaids at the present time are neither plentiful nor conciliatory; especially are they non-conciliatory in regard to the use of raw coal. For which reason alone—and we think it idle to arrange a plebiscite on the question—we do ask whether the Coal Utilisation Council, in advocating so strongly the greater employment of coal for domestic heating requirements, is expending energy with but little virtue.

Bitterness

As we have said, the C.U.C. Report is noteworthy for its length; it is also noteworthy for its inconsistency. We gather that the aim of the C.U.C. is to work hand-in-hand with those industries which are treating coal to the best advantage. We refer to the carbonizing industries, the chief being the Gas Industry. Well, we think the coal industry, in its sympathetic heart, must admit that it has gained a pretty penny from the increases in gas coal charges to the Industry. That inevitably the gas consumer pays for these increases is of no concern to the coal industry. Why, from the coal industry's point of view, should it be? All is fair in gas and coal.

Gas undertakings have not of late much for which to thank the coal industry. Not only have gas coal prices soared like a pole vaulter, but the qualities of the coals graciously offered by the coal industry for hard cash have been within monopolistic jurisdiction. Gas undertakings, in short, have in more instances than makes a happy story been

unable to procure the right types of coal, irrespective of price. Let that be, however. But we do know now, through the C.U.C. report, what "hand-in-hand" working can mean in practice. It may to some appear a question of the co-operative tongue in the cheek. The C.U.C. has been dealt a bitter blow, the poisoned nut, which it has found hard to crack, being "Britain's Burning Shame." This pleasant publication was, of course, issued by the National Smoke Abatement Society. It stressed in telling fashion the very real evils of smoke filth. We learn—not without astonishment—from the C.U.C. report that the "booklet was purchased in large numbers by the Gas Industry and distributed free throughout the country to members of the public." And why not? Does the C.U.C. complain about effective publicity based on the cause of public benefit? Smokeless air is in the community's benefit. Propaganda to that effect is to be encouraged; it should not be, as it has proved, a source of grievous bitterness to the purveyors of raw coal. If there is a solution to the smoke menace—and we know full well there is one—why should not the public be told about it? The truth is that "Britain's Burning Shame" hit home.

Offensive Smoke

In fact, the C.U.C. regarded this innocent pamphlet as "offensive"—to say the least of it. We interpret the report as meaning that the Gas Industry has hit below the belt. The C.U.C. has considered the question of retaliatory action on several occasions. In spite of the "provocative" nature of the gas campaign, it decided not to retort in kind, in spite of "misleading statements of the gas interests." Yet, during the currency of "Britain's Burning Shame," the C.U.C. issued a booklet entitled "Forty Years of Smoke Abatement." Forty years of smoke abatement by raw coal amuses us. It must amuse any reader who lived in the industrial north before—and even after—the War; and on reflection it must give thought to the resident in the south. We referred last week to the fact that if its escape is sufficiently impeded the smoke produced in London in two or three hours on a winter morning is enough to make a dense smoke fog. This smoke is produced by the domestic open firegrate, the raw coal fire.

With relevant statistics at command we have during recent years been moderate and sedate in assessing the amount of raw coal burned in domestic premises. We had come to think that the 40,000,000 tons a year figure was open to question. We had concluded, as a result of no little debate among knowledgeable people in the coal industry, that perhaps the amount should be between 25 and 30 million tons annually. That was the field which, we suggested, the Gas Industry, with its two smokeless fuels, ought to aim at and conquer. We may have been wrong, however. From the C.U.C. report: "The figure of 40,000,000 tons quoted in the reports of the Mines Department as the probable consumption after the War included coal used in commercial buildings, offices, schools, churches, places of entertainment, farm buildings, dairies, and even small bakehouses and laundries. Quite recently it was estimated that the consumption had now fallen to between 25 and 30 million tons. That figure is certainly just guesswork, and very far from the mark. The report which the Director is preparing on the result of various enquiries into the use of fuel may show that the aggregate consumption of solid fuel (mostly coal) in the domestic market is at least as great as when the original estimate was made." As far as the Gas Industry is concerned, the greater the better. The wider the field, the more should it add to the zest of ambition towards the riddance of "Britain's Burning Shame"—not as a pamphlet, but as an actuality.

Adopting a topical frame of mind, the C.U.C. ingenuously admits that its "policy of appeasement" towards the Gas Industry has not been "immediately successful." We suggest that the Gas Industry is not concerned with power politics so much as with clean skies and a modern and convenient life, without economic troubles, for the hard-pressed housewife.

Certification of Appliances

We were pleased last week to be able to give the views of Mr. James Harrison on the certification of gas appliances. As Deputy President and Secretary of the National Gas Association of Australia, he is able to speak on the subject from an intimate experience of the working of the Association's own scheme. This is a topic which has been raised on various occasions in this country, especially since the visit of the Institution to America, and the subsequent Institution Paper in 1935 by Lacey and Masterman, called attention to the existing scheme in the U.S.A. In many instances we have discussed the pros and cons of appliance badging in these columns, and a particularly interesting feature of Mr. Harrison's article last week was that he took seriatim the cons which have been raised in this country, and most of which we have voiced often enough, and gave reasoned answers to them.

At the beginning of his article Mr. Harrison stated that "although the standard of gas appliances in England appears to be relatively high, the fact that the question of their certification is raised there from time to time would appear to indicate that there exists some need for such a scheme." In this, we think, Mr. Harrison is mistaken. In fact, on every occasion when the question has been raised we have found the general consensus of opinion against certification so strong that further discussion of it would seem rather academic. This is not to say that Mr. Harrison's article was anything but extremely interesting as stating the case for certification, but without wishing in any way to set the British Gas Industry on a pinnacle, it has been shown over and over again that circumstances are different here from those in America—or Australia for that matter. We think, too, that he understates the case for our gas appliances when he says their standard "appears to be relatively high." Our manufacturers definitely have set a very high standard, and on the whole the shoddy appliance has little chance of being foisted on the public. It is safe to say, whatever views are held in this country on the question of organized testing of appliances, there is no demand from any section of the Industry for badging *qua* badging.

Insurance of War Risks

The Government have now introduced a Bill for the purpose of authorizing the Board of Trade in the event of war to undertake the insurance of ships and other goods. At the same time a White Paper has been issued explaining the extremely complicated provisions of the Bill.

Briefly, the Board of Trade will put into operation a scheme for the insurance against enemy risks of goods in Great Britain held for sale or use as materials from which goods for sale are to be produced. The scheme will not be administered by the Board of Trade, but will be operated by Lloyds and the Fire Insurance Companies as agents of the

Government. The essence of the scheme will be that during times of peace owners of goods will be entitled on the payment of a small fee to register, thereby giving notice that in time of war they desire that the insurance scheme should be extended to their goods. The amount payable on registration will vary in accordance with the amount of cover required. It will not, of course, be possible to fix the premiums until war actually breaks out.

When hostilities begin, owners of goods who have registered will receive immediate cover, and will be issued with a policy of insurance. Those who have not registered will not receive immediate cover, and may experience some delay in obtaining such a policy of insurance. Normally speaking, the policy will be issued for three months, and the premiums would also be fixed for that period. The rate of the premiums would be uniform for all classes of goods.

The extent to which gas undertakings will avail themselves of this scheme, which is entirely voluntary, is, of course, problematical. The scheme relates solely to goods, and to materials from which those goods are produced. It would, therefore, normally cover raw materials in stock as well as the finished product. The Government have been strongly urged from certain quarters to extend the scheme to buildings and plant, but there is little chance that such an extension could be contemplated. The value of commercial buildings and plant throughout the country is, of course, enormous, and it is quite impossible to foretell the extent of the damage which might be done by hostile aircraft. There would, therefore, be no method of computing the risk or of fixing the premiums. It is doubtful whether such a vast scheme could be inaugurated unless it were made compulsory, and the premiums which would be payable under a compulsory scheme would really amount to additional taxation.

While there is much to be said for the contention that the destruction of buildings and machinery by hostile aircraft is a risk which should be carried by the nation as a whole, the general opinion held by experts is that no practical scheme could be devised for this purpose. It has therefore been necessary to restrict the scheme which has been introduced by the Government to goods and materials from which they are produced. It will no doubt be necessary to work out further details of the scheme, even in its limited application. For instance, would the insurance apply to goods owned by a gas company, such as a gas cooker, which had been let out to a consumer on hire purchase terms? If this were the case, a somewhat curious position would arise in the event of domestic premises containing a gas cooker on hire purchase being demolished in an air raid. The owner of the premises would have no right to receive compensation for the loss of his house and furniture, but the gas company who owned his gas cooker might have a right to claim under the insurance scheme for the loss of the cooker.

The liabilities which the Government are accepting under the scheme are in addition to those imposed upon the Treasury by the Civil Defence Act. Under this Act, the Treasury are to assume liability to pay compensation to those who sustain personal injuries in the course of being trained or training others in air raid precautions during peacetime. This would, of course, cover the employees of gas undertakings who have, in compliance with the new Act, to be trained in anti-gas and fire fighting precautionary measures. The Government have not yet assumed responsibility to civilians who are injured after the outbreak of war. The extent to which the nation as a whole could assume liability to civilians or their dependents who are killed or injured after hostilities commence must, we presume, be regarded as a matter of policy which would have to be decided by the Government after the outbreak of war.

The proposals of the Government with regard to these matters must necessarily be limited, and although full cover for all life and property would be ideal, the Chancellor of the Exchequer has unfortunately to take into consideration the available resources of the Treasury.

Personal

On July 10 the Gainsborough Urban Council appointed Mr. J. ASPINALL DERBYSHIRE, Chief Assistant Engineer and Works Superintendent to the Shipley Gas Department, as Engineer and Manager of the Gainsborough Gas Department, in succession to Mr. C. E. BYRT, who has resigned.

* * *

Mr. ERNEST W. SMITH, Chairman of Smith Meters, Ltd., and a Director of United Gas Industries, who died on Aug. 18, 1938, left £525,312 (net personalty £497,580).

* * *

The marriage took place at Dunfermline on July 10 of Mr. J. B. SCOTT, only son of Mr. James J. Scott, Engineer and Manager to the Cowdenbeath Gas Company, and Mrs. Scott, "Burnbrae," Cowdenbeath, to Miss JEAN SHEPHERD, only daughter of Mr. and Mrs. D. C. Shepherd, Dunfermline. Mr. J. B. Scott is on the staff of the British Thomson-Houston Company, Ltd., Rugby, and is to reside there.

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Mr. CHARLES R. TROTTER, Technical Assistant to the Hawick Gas Company, has been appointed Engineer and Manager of the Langholm Gas and Electricity Supply Company, in succession to Mr. J. S. MCLAREN, who, as already announced, was recently appointed to a similar position at Cockermouth.

Letter to the Editor

Need for Camouflaging Gas-Works

SIR,—All gas undertakings have been or are busy making preparations for the possible results of bombs dropped from the air, and most undertakings have no doubt organized their fire fighting and decontamination squads, breakdown gangs, and so on. But it seems to me that sufficient attention is not being paid to the possibilities afforded by camouflage of avoiding attack. No one who has been able to compare the visibility of a gasholder or factory before and after camouflage can have any doubt as to its effectiveness in diminishing the chances of a direct hit. Having regard to the speed of the modern bomber, a target must be identified at a considerable distance away, and if this be made difficult, as it can be by camouflage, the chances of escape are very materially increased.

It may be the fact that in well defended large industrial centres bombs will be dropped more or less at random, but in other areas gas-works are not infrequently the most conspicuous objects when seen from the air, and may well attract unwelcome attention from pilots foiled in an attack on a more important objective.

It is not, perhaps, of great national importance if a gas-works in a residential area be destroyed, or for that matter the residential area itself, but it is a matter of concern to the inhabitants and to the owners of the works, and they would, I think, do well to consider the advantages of camouflage.

Yours, &c.,

ARTHUR VALON.

5, *Victoria Street, S.W.* 1.
July 12, 1939.

Forthcoming Engagements

July.

20.—B.G.F.—Meeting of Joint Exhibitions Committee, Gas Industry House, 2.30 p.m.

21.—I.G.E.—Liquor Effluents and Ammonia Committee, 11.30 a.m.; Joint Research Committee, 2.30 p.m.

24.—L.C.C.A.—Technical Committee, 3 p.m.

24.—L.C.C.A.—Joint Committee, Gas Industry House, 12 noon.

25.—L.C.C.A.—Technical Committee, Gas Industry House, 2.30 p.m.

25-26.—Irish Association.—Annual Meeting in Dublin.

News of the Week

Among the Objects of a Special Order for which the Haywards Heath District Gas Company intend to apply to the Board of Trade under the Gas Undertakings Acts, 1920 to 1934, is to empower the Company to raise additional capital.

Declarations of Calorific Value are made by the Stony Stratford Gas and Coke Company and the Willenhall Gas Company in the June 30 issue of the *London Gazette*. Both these Companies will supply gas of 500 B.Th.U. per cu.ft. after Oct. 1.

An Application by the Newcastle-upon-Tyne and Gateshead Gas Company for permission to run a 24-in. emergency gas main over Riversdale Road near the King Edward Bridge to provide an alternative supply of gas has been granted by the Gateshead Town Council.

After Tenders from the Chatteris Gas Company and the Beds., Cambs., and Hunts. Electricity Company had been considered, the Chatteris Urban Council decided at their July meeting to accept the tender of the Gas Company for street lighting at the price of £317 18s. 9d. for the next 3 years.

An Increase in Gas Charges is announced by the Rochdale Gas Committee, which has decided that as from July 15 the price of gas be increased 10% to all consumers with the exception of those on the two-part system in whose case the fixed charge is increased from £2 to £2 10s. per annum. It was stated at a meeting of the Town Council that the average cost of coal has increased from 21s. 2·11d. per ton in 1936 to 24s. 3·36d. per ton in 1939 and would probably be 25s. 10d. per ton in the year ending March 31, 1940.

The Only Money-Earning Department of the Lakes Urban Council, according to Mr. T. B. Atkinson, is the Gas Committee, of which he is Chairman. Presiding at a "Calor Gas" demonstration in Langdale village last week, he therefore urged Langdale people to purchase "Calor Gas" and thus help to reduce rates. The demonstration was given by Miss P. M. Allen (*Diplomée* N.S.T.C.D.S.) with the aid of Parkinson "Calor Gas" appliances. Mr. W. N. Battersby, Engineer and Manager to the Lakes Gas Department, thanked Miss Allen.

In the Regal Cinema, Paisley, on July 12, two "Ascot" sink water heaters were presented to winners of a crossword competition held in connexion with a water heating campaign organized by the Paisley Gas Department. The prizes were handed over by Mr. Sidney Smith, making his first public appearance as Engineer and Manager of the Undertaking since his arrival from Bristol.

A Scheme for the Modernization of the Salford Gas-Works has been prepared by Mr. F. H. Goodwin, Engineer and Manager of the Corporation Gas Department. This involves an expenditure of about £150,000. Details of the scheme have been set out in a report, which it is understood has been approved by the Light, Heat, and Power Committee. One of the reasons for the scheme is stated to be the increased price of coal.

Copies of the Following Recently Issued B.S. Specifications can be obtained from the Secretary, The Institution of Gas Engineers, 1, Grosvenor Place, London, S.W. 1, at 3s. 6d. each: No. 854-1939.—Welded Steel Boilers for Steam Central Heating; No. 855-1939.—Welded Steel Boilers for Hot Water Central Heating and Hot Water Supply; and No. 859-1939.—Test Code for Fuel Fired Furnaces for Heating and Heat Treatment Purposes.

Most Accidents in the Home are due neither to ignorance nor circumstance but to thoughtlessness, and the recapitulation of precautions to be observed for their prevention has been carried out in a readable manner by the National "Safety First" Association in their latest booklet "Beware." Eileen Murphy speaks for gas; it is safe, she says, and there is no reason why its use should not be entirely free from even small risks. But for those who will persist in looking for a gas leak with a candle and other unimaginative souls, Mrs. Murphy has some sound advice to offer. The pamphlet also has many hints on such subjects as the prevention of fire, the safe use of electricity, what to do in an emergency, the giving of first-aid, warnings to holiday makers, and resuscitation—all for 2d. The address of the Association is Terminal House, 52, Grosvenor Gardens, S.W. 1.

National Gas Council

Meeting of the Central Executive Board

A meeting of the Central Executive Board of the National Gas Council was held at Gas Industry House on Tuesday, July 11, at 2.45 p.m., under the Chairmanship of Sir DAVID MILNE-WATSON, Bart., LL.D., D.L.

Coal.

(*a*) **Amalgamation of Coal Committees.**—An amalgamation of the Council's existing Coal Committees was agreed, with wider Terms of Reference, to include any matter concerning coal.

(*b*) **Decision of the Central Appeal Tribunal in the Case of Associated Portland Cement Manufacturers, Ltd.**—It was stated that there had been circulated a verbatim Judgment of the Central Appeal Tribunal in the case of Associated Portland Cement Manufacturers, Ltd., *versus* the Central Council of Colliery Owners. It was thought that this Judgment should be of considerable value to those consumers who desired to change their source of supply. The Judgment definitely stated as follows:

> "In our opinion to prevent a consumer from changing his source of supply is unfair to the consumer in the absence of evidence which shows a special need for this kind of interference with freedom of contract."

Mains and Cables in Highways.

Decision of the Joint Committee of the House of Lords and the House of Commons on the breaking-up of Streets by Statutory Undertakers.—It was stated that the members of the Board would be very gratified to learn from the Report which had been circulated of the success achieved by the Conjoint Conference of Public Utility Associations in this regard.

It was stated that the gist of the recommendations of the Joint Committee was that the liability for the cost of removing mains and cables when a highway or bridge was being reconstructed should rest upon the party which initiated the proposal to effect the alteration of the highway or bridge.

This meant, as the Report pointed out, that in practically every case, the cost would be borne by the Highway Authority.

Similarly, the contention of the railway companies that any additional expense caused to a railway company when altering a bridge or level crossing which was due to the existence of mains or cables in that bridge or under that level crossing should be borne by the Public Utility Undertaker had not been accepted.

It was added that a meeting of the Mains and Cables Committee of the Conjoint Conference was taking place the following day, when consideration would be given to the next step to be taken.

Issue of Prospectuses by Gas Undertakers.—A letter from Mr. A. F. B. Cooke, Secretary of the Stock Exchange Committee, Share and Loan Department, dated July 5, had been circulated, in which the Committee asked if they could have "the advantage of the co-operation and advice" of the Council in connexion with the form of prospectus and other documents issued by Gas Undertakers. The Committee was at present re-drafting its Rules relating to permission to deal in quotations, and they had suggested that, with the Council's help, it should be possible to evolve rules which would fit the peculiarities of statutory companies and at the same time give the public the protection and disclosure which were due to them.

It was agreed that the Industry should be circularized with a request that they keep in touch with the Stock Exchange in this matter.

Gas Industry House—A.R.P.—It was stated that members would see from the Report which had been circulated that all necessary precautions had been taken in the building, and that these precautions had been officially approved by the Chief Engineer of the City of Westminster.

Date of Next Meeting.—It was agreed that the next meeting of the Board should take place on Sept. 12.

North British Association of Gas Managers

The Annual General Meeting of the Association will be held in the United College Hall, The University, St. Andrews, on Thursday, Sept. 7.

The usual annual excursion will take place on the following day, Friday, Sept. 8, and will take the form of a motor tour around the North of Fife, returning to St. Andrews, where luncheon will be served in the Victoria Café.

The Council have nominated Mr. R. M. Simpson, Denny, for the office of Junior Vice-President.

The Town Council of the City and Royal Burgh of St. Andrews will accord a civic reception to the members and their lady friends in the Younger Graduation Hall, St. Andrews, on the evening of Thursday, Sept. 7. Reception by Provost John Reid, J.P., at 7.45 p.m. A Dance will follow immediately after the Reception.

The Chairman and Directors of the St. Andrews Gas Company invite the ladies for a motor tour around the East Neuk of Fife, via Crail, Anstruther, and Elie. Tea will be served at the Marine Hotel, Elie.

After the morning session, at 12.30 p.m. a group photograph will be taken in the University grounds.

The Golf Competition for the Association Challenge Bowl will take place on Wednesday, Sept. 6, over the Eden Course, St. Andrews. Entries should be made to Mr. J. O. Scott, Hon. Secretary, New Grange Works, Edinburgh, 11, not later than Aug. 21.

By courtesy of the St. Andrews Bowling Club, the Bowling Competition will take place on Wednesday, Sept. 6, on the St. Andrews Bowling Green, Kinnesburn Road, St. Andrews, at 2 p.m.

A Golf Competition for ladies will take place on the same day.

A Putting Competition for ladies will be held on the St. Andrews Putting Green at Bruce Embankment on Thursday forenoon at 10.45 a.m.

United Kingdom Gas Corporation, Ltd.

Sales and Production Figures

Production and sales figures published by the United Kingdom Gas Corporation, Ltd., show steady and progressive rises in the results of the Undertakings concerned since being acquired by the Corporation.

For the year 1938 the amount of gas sold by the various undertakings embraced by the Corporation, excluding gas sold in bulk to other undertakings, amounted to 6,573,538,000 cu.ft. Certain of the Companies concerned were taken over by the Corporation during this period and if these are omitted for comparison purposes, it is shown that the total gas sales of those companies controlled by the United Kingdom at the beginning of the year amounted to 5,741,002,000 cu.ft. in 1938, as compared with 5,614,408,000 cu.ft. for the same companies in 1937, representing an increase of 126,594,000 cu.ft., or 2·2%.

Similar increases are shown in the cases of the Undertakings more recently taken over by the Corporation and not included in these figures. For the first completed quarter of 1939 (March) the amount of the increase in gas sales was 135,506,000 cu.ft., or 7·24%. The biggest increase has been in the quantity of gas sold for industrial uses (factories, workshops, bakeries, &c.), which it is the Corporation's special object to advance. For the March quarter, 1939, there was an increase in these industrial sales of 21·46% over 1938.

Even more striking advances have been registered in the sales of gas appliances (cookers, boilers, &c.) under a newly created organization for this purpose. For the first twelve months for which comparable figures are available, in Lancashire and Cheshire areas only, there has been an increase of £114,564 in the sale of domestic gas appliances, as compared with the previous twelve months' operation. All areas show an increase of more than 100%, and one area (Ramsbottom, &c.) an increase of 232%. The number of new appliances sold has totalled 27,224, of which more than half are new cookers.

Amalgamation and Grouping

South-Eastern, Hornsey, and Lea Bridge.

The South-Eastern Gas Corporation, Ltd., which is closely associated with the Gas Light and Coke Company, has made offers to acquire the issued Ordinary and Preference stocks of the Hornsey Gas Company and the Lea Bridge District Gas Company. If the offer is accepted, holders of the Hornsey and Lea Bridge Ordinary stocks will obtain, at the present rate of dividend paid by the South-Eastern Gas Corporation, a higher income than at present, while holders of the Preference stocks will obtain the same income as now with the addition that dividends will be cumulative. In both cases the exchange will result in a substantial increase in market value.

Holders of 5% Standard stock of the Hornsey Company are offered for each £100 stock either (*a*) 127½ Ordinary shares of £1 each in South-Eastern Gas Corporation or (*b*) 106¼ Ordinary shares of £1 each and 30 4% Irredeemable (Cumulative) Preference shares of £1 each in the Corporation. Holders of 3½% Standard stock are offered for each £100 stock either (*c*) 102 Ordinary shares of £1 each in South-Eastern Gas Corporation or (*d*) 85 Ordinary shares of £1 each and 24 4% Irredeemable (Cumulative) Preference shares of £1 each in the Corporation. Holders of 5% Preference stock are offered for each £100 stock 125 4% Irredeemable (Cumulative) Preference shares of £1 each in South-Eastern Gas Corporation.

Holders of Consolidated Ordinary stock of the Lea Bridge Company are offered for each £100 stock either (*a*) 145 Ordinary shares of £1 each in South-Eastern Gas Corporation or (*b*) 120 Ordinary shares of £1 each and 35 4% Irredeemable (Cumulative) Preference shares of £1 each in the Corporation. Holders of 4% Preference stock are offered 100 4% Irredeemable (Cumulative) Preference shares of £1 each, holders of 5% Preference stock are offered 125 4% Irredeemable (Cumulative) Preference shares of £1 each, and holders of 6% Preference stock are offered 150 4% Irredeemable (Cumulative) Preference shares of £1 each in South-Eastern Gas Corporation for each £100 stock now held.

In all cases cash payments will also be made in lieu of the net dividends accrued to June 30 last.

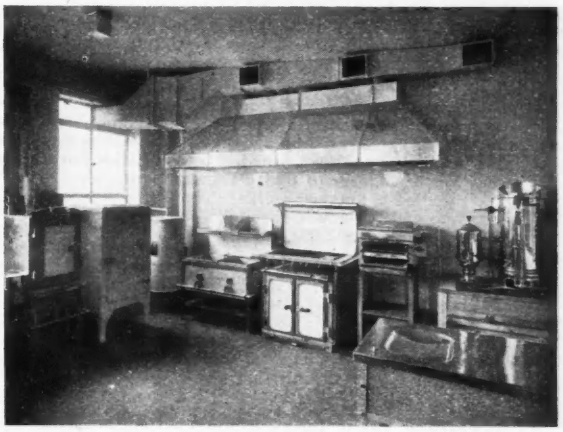
The Gas Light and Coke Company has offered to purchase any Ordinary shares in the South-Eastern Gas Corporation which are allotted as a result of the present offers, at the price of 22s. a share, free of expense to the sellers.

William Murdoch Centenary

Plans for Celebrations

Members will now have received from the British Commercial Gas Association a folder containing suggestions for celebrating this occasion, which takes place on Nov. 15. No doubt many gas undertakings will make this an opportunity for interesting the public in the amazing developments which were the outcome of William Murdoch's genius, and the revolution which they have brought about, and continue to bring about, in the ordinary ways of life.

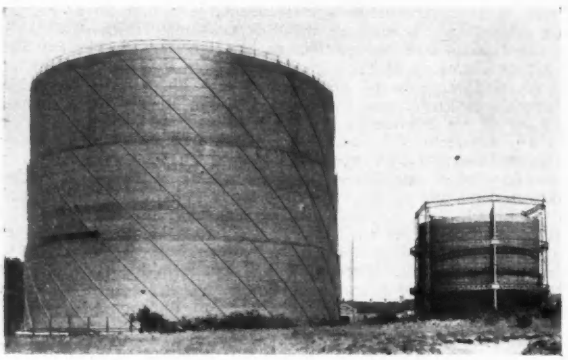
Meanwhile plans have been going forward for some time for an important celebration in Glasgow. Arising out of a remark by Mr. J. W. Napier at a luncheon attended some time ago by Lord Provost Dollan, the Corporation will give a luncheon on Nov. 15 in the City Chambers and a reception there in the evening. An oration by a prominent Scotsman will be given at, say, 12 noon, within the Royal Technical College, or possibly the City Chambers. During the forenoon, and prior to the Lecture, there will be handed over to the Governors of the Royal Technical College a complete experimental gas-works plant for use by technical students. This is the gift of Mr. J. W. Napier in commemoration of the Centenary and is a recognition of the intimate influences and interests of the College with the Gas Industry. The Ceremony will be by special invitation.



Our photograph shows some of the Radiation large-scale cooking equipment recently installed in the canteen of Spratt's Patent, Ltd., Bow. Gas also provides the water heating in this kitchen.

New Gasholder for Dudley Company at Kingswinford

There was inaugurated on June 23 a new 1,500,000 cu.ft. gasholder at the Kingswinford Distribution Station of the Dudley, Brierley Hill, and District Gas Company.



New and Old.

THE erection of the gasholder at the Kingswinford Distribution Station of the Company completes a stage of development that commenced with the amalgamation of the Dudley and Brierley Hill Gas Undertakings. Following that amalgamation very careful consideration was given to the question of the most satisfactory and economical manufacture of gas for the combined area.

As a result it was decided to concentrate all gas manufacture at the Dudley Works. The retort house was extended and practically the whole of the rest of the works remodelled, refitted, and extended. The last section, the erection of new purifiers, was completed in October last year. Gas-making ceased at the Brierley Hill Works on Feb. 1, 1933, but that works was retained (together with the Kinver and Kingswinford Stations) as a gas storage and distribution station and a district service depôt.

In the last sixteen years the consumption of gas has doubled over the whole area, but the increase has been particularly rapid during the past six years. This rapid growth brought with it the necessity of increasing the Company's gas storage capacity.

Stability of the foundation is a vital necessity for a gasholder. This compelled the Company to erect the new holder at Kingswinford on sandstone. No other ground which the Company possessed or which was available was satisfactory owing to mining operations. The site increased the capital cost by over one-third as it necessitated the laying of a special main for the rapid transport of gas between Dudley Works and the gasholder. This increased heavy cost was regrettable, but the site does bring one advantage. It has enabled the Company to form a triangle of storage stations at Dudley, Brierley Hill, and Kingswinford, all of which are linked together by special steel high-pressure mains with the means of transporting gas in either direction from one station to another.

The passage of gas from the Dudley Works to Kingswinford and its return to Dudley when required is normally controlled at the Dudley Works. There have been installed, however, at Kingswinford compressors which can assist the return of gas to Dudley in emergency and also send gas from Kingswinford direct to Brierley Hill or to Kinver. Kingswinford, Wall Heath, and Wombourn are supplied direct from the Kingswinford Station. These compressors have been installed in a new compressor house containing also a gasfitter's shop and small stores (replacing those dismantled to allow of the construction of the gasholder) for district service in the immediate area. The compressors were steam driven and installed at another Works. They have been converted for belt driving and the power is supplied by motor lorry engines converted for operation by gas.

Details of Contract.

The Tank.—The tank is of annular design constructed of mass concrete partially reinforced with steel and sunk in the ground. The site has loose sand and soil for a depth of about 11 ft. and thereunder sandstone.

Depth of the tank inside	37 ft. 3 in.
Diameter of the tank inside	140 ft.

Contractors: Messrs. Thomas Vale & Sons, Ltd., Stourport.

The Holder.—The gasholder is constructed of wrought iron sheets with self-supporting steel girder construction carrying the crown. The majority of the sheets on the crown are 8 S.W.G. (0·16 in.) thickness and on the side of 10 S.W.G. (0·128 in.) thickness. The total weight of the gasholder is approximately 500 tons. Approximately 470,000 rivets were used.

Diameter of the inner section	132 ft. 3 in.
,, ,, centre ,, ...	135 ft.
,, ,, outer ,, ...	137 ft. 7 in.
Height of each section	36 ft. 6 in.
Height to the top of the gasholder fully inflated (from tank curb)	114 ft. 9 in.
Capacity approximately	1,500,000 cu.ft.
Pressure thrown when fully inflated	13¾ in. W.G.

Contractors: Messrs. Westwood & Wrights, Ltd., Brierley Hill.

The Main.—The main from Dudley to Kingswinford is of steel, of 10 in. internal diameter and protected from external corrosion by bituminous-canvas covering. The joints were welded by oxy-acetylene. Two special way-leaves were obtained to shorten the distance and obviate disturbing the surface of a congested main road.

Length over 4¼ miles (7,624 yd.).
Contractors—
Steel pipes: Messrs. Stewarts & Lloyds, Ltd.
Pipe laying: Messrs. E. E. Jeavons & Co.

Compressors.—The compressor capacity is 27,000 cu.ft. per hour, each at 30 lb. per sq. in.

Makers	Messrs. Peter Brotherhood, Ltd.
Engines	48 H.P. at 1,000 r.p.m.
Makers	Leyland Motors, Ltd.

Compressor house—
Architects: Messrs. Jennings & Homer, Brierley Hill.
Builders: Messrs. A. & B. Oakley, Lower Gornal.

Inauguration Ceremony.

By operating the inlet and outlet valves, the Mayor of Dudley (Alderman A. E. Young) and the Vice-Chairman of the Brierley Hill U.D.C. (Councillor J. B. Hill) inaugurated the new holder in the presence of a large gathering.

Before the inauguration ceremony the Chairman of the Company (Mr. W. W. Skidmore-Westwood) told the Mayor and Mr. Hill that they were about to put the seal on a very important piece of work carried out in the last two years. After the holder had been put into commission, Mr. Westwood remarked, "You have committed that holder to at least 60 or 70 years' penal servitude."

The Mayor of Dudley (Ald. A. E. Young) Opening the Gasholder Inlet Valve. Mr. F. C. Briggs (Engineer and Managing Director) is on the left.

Before leaving, the visitors saw a demonstration of the arrange-

ments at the station for dealing with fires which might be caused by air bombing. A crater had been prepared, exposing broken ends of two 6-in. gas mains. The gas was set alight, and the A.R.P. squad, consisting of half-a-dozen men in respirators and protective clothing, arrived in a lorry and quickly extinguished the fires with a plunger, which was afterwards sealed into the damaged pipes.

At the luncheon which followed at the Station Hotel, Dudley, Mr. W. W. Skidmore-Westwood presided, supported by the Mayor of Dudley, Councillor J. B. Hill, Councillor J. T. Higgs (Chairman of Brierley Hill Council), Mr. F. C. Briggs (Engineer and Managing Director of the Company), Mr. W. H. Thompson (Vice-Chairman of the Company), and Mr. F. W. Wright, representing the contractors. Members of Dudley and Brierley Hill Councils were also present.

Mr. Skidmore-Westwood, proposing the toast of "The Guests," described the holder as a fine piece of engineering, carried through in record time. The Dudley Gas Company, he said, was the oldest public utility company in the borough, for it received its first charter in 1821. To-day the works had the most modern labour-saving plant, with economic production to meet any demand. Thirty-five per cent. of the total output was for industrial purposes. Mr. Westwood then presented the Mayor and Mr. Hill with cut-glass vases as a memento of the occasion.

The Mayor of Derby replied and congratulated the Company upon its enterprise. Councillor J. B. Hill also responded.

Councillor A. Hillman proposed "The Company" and Mr. W. H. Thompson responded.

On behalf of Westwood & Wrights, Ltd., of Brierley Hill, who built the gasholder, and Thomas Vale & Sons, Ltd., of Stourport, contractors for the tank, Mr. F. W. Wright presented a handsome silver tray to Mr. F. C. Briggs.

Mr. Briggs, responding, said he was perfectly certain the gasholder would give not a moment's anxiety to his successors. It had been a perfect job and would stand for hundreds of years as a monument to the skill of the designers and manufacturers. Every penny was spent, so far as possible, in the area, the only exception being the purchase of the wrought-iron plates on the outside.

A.R.P. Squad Extinguishing an Ignited Gas Main.

Following luncheon there was an inspection of Dudley gasworks followed by tea, all provided, including home-made cakes, by the Company's home service bureau.

New Carbonizing Plant at Ambleside

Meeting Increased Demands

The Lakes Urban Council's new horizontal carbonizing plant at Ambleside Gas-Works was inaugurated on July 7 by Mr. G. Aitchison, until recently Chairman of the Council, in the presence of a large number of Councillors, officials, and visitors.

Mr. Aitchison referred to the great and effective interest the Chairman of the Gas and Water Committee (Mr. T. B. Atkinson) had taken in the work of the Lakes Urban Council and in that of the Ambleside Council before it. Very intensive reconditioning had taken place at the Gas-Works during the past year at a cost of over £10,000. The Works had been constructed in 1866 by a private company and purchased by the local authority in 1898. Since then its output had increased from 9 million to 22 million cu.ft. per year. The increase was not due to an extension of the area supplied or to an increase in the population, but entirely to the increased use of gas for cooking and heating by the people of the district. In 1938 the Engineer and Manager (Mr. W. N. Battersby) reported that it would be impossible to carry on the Works at the output in operation at that time, and that to meet the yearly increase in the demand for gas would be out of the question, unless improvements were effected. Mr. Battersby was therefore instructed to prepare plans and to obtain estimates for a new plant. The Council were fortunate in possessing an engineer of Mr. Battersby's capabilities to take over such skilled duties. The Council, concluded Mr. Aitchison, were extremely happy when they were able to accept the tender for the work submitted by Messrs. Drakes, Ltd., of Halifax, who had served the Ambleside plant ever since it came into the possession of the Ambleside Council. A plate was then unveiled, bearing the names of Mr. Aitchison, who was Chairman of the Council when the plans for the new plant were approved; Mr. T. B. Atkinson, Chairman of the Gas and Water Committee; the members of the Gas and Water Committee, the Clerk, the Gas Engineer, and the Contractors. Mr. Atkinson thanked Mr. Aitchison for performing the ceremony.

A luncheon followed at the Waterhead Hotel, at which Mr. M. T. THOMPSON, Managing Director of Messrs. Drakes, Ltd., presided. The loyal toast was proposed by Mr. ATKINSON, after which Mr. E. H. PATTINSON, Chairman of the Windermere Urban Council, proposed the toast of "The Lakes Urban Council." Mr. Pattinson congratulated the Chairman and members of the Gas and Water Committee on the success of their new undertaking.

Mr. R. E. PORTER, Chairman of the Lakes Urban Council, responding, remarked that the Gas Undertaking was purchased for £21,000 40 years ago and including the initial outlay, the total capital expenditure since then had been £44,000. Of that, £21,000 remained to be paid off, and in four years' time only £15,000 would remain. If coal costs remained at their present level a reduction in the price of gas might be anticipated by ratepayers. In the past five years, gas consumption in Ambleside had increased by 36%, and that was in no small measure due to Mr. Battersby.

In proposing the toast of "The Contractors," Mr. AITCHISON recalled that when the Council found themselves faced with a very large expenditure on their Gas-Works, in order to bring them up-to-date and also meet the increasing demand, they realized the difficulties that were bound to be experienced in carrying out the work. They were therefore determined that the contract should be entrusted to a firm of gas constructional engineers of the highest repute, and were greatly relieved when they found themselves able to accept Messrs. Drakes' estimate. All would agree that the manner in which the work had been executed fully justified the firm's outstanding reputation.

Dealing with the nature of the work carried out, Mr. Aitchison went on to say that a new retort house, coal store, and carbonizing plant had been built on the site of the old retort house, which had been in operation for over thirty years. The old retort bench consisted of beds of four, five, six, and eight retorts. Those beds, being of the subway furnace type, presented considerable difficulty in arranging for two beds to remain at work during the building of the new plant. In fact, the new coal store, half the new retort house, and half the new retort bench were built and put to work before pulling down the last portion of the old bench and retort house. The new coal store and retort house were of steel construction, fitted in with Kendal limestone bricks, which gave a good appearance in keeping with the surrounding property.

On behalf of the Lakes Urban Council and the ratepayers they represented, Mr. Aitchison expressed thanks to Messrs. Drakes, their Staff, Mr. Greenwood (Local Engineer), and the workmen for the way they had carried out their work.

The Chairman suitably acknowledged the toast. The toast of "The Visitors" was proposed by Mr. T. B. ATKINSON and Messrs. J. B. DIXON (Chairman of the Windermere Council) and T. C. BATTERSBY (Manager and Chief Engineer of the Watford and St. Albans Gas Company) responded.

Mr. ATKINSON also toasted the health of Mr. W. N. BATTERSBY, who replied.

Mr. M. T. THOMPSON presented Mr. Aitchison with a silver casket, and Mr. Atkinson with a gold cigarette case as mementoes of the occasion, and both expressed their thanks.

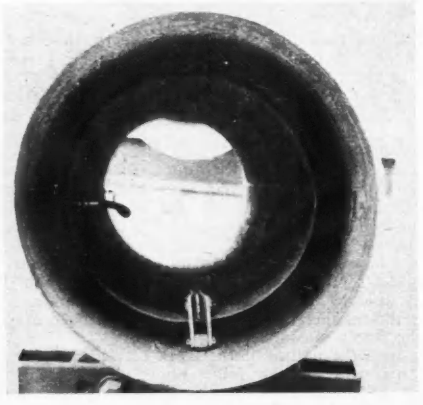
A Rapid Method for Emergency Repair of Gas Mains

A demonstration was given last week at the works of the Eastbourne Gas Company of an exceedingly rapid and effective method of providing a temporary repair for fractured gas mains. This will be of particular interest to the Gas Industry from the point of view of A.R.P.

IN these days when A.R.P. is occupying so much attention throughout the Gas Industry any means of safeguarding the supply of gas to the consumer must be of vital importance. We have in recent months described in these columns some of the methods which have lately been introduced for dealing with ignited gas, for protecting plant generally, and for effecting rapid repairs to broken mains and services, in which respect a valuable contribution to the sum total of the Industry's preparedness for any emergency is to be found in the "H. & C." Patent Coupling developed by Messrs. Horseley Bridge & Thomas Piggott, Ltd.

On the invitation of the Eastbourne Gas Company a number of Gas Engineers and Managers and members of distribution staffs from Kent and Sussex gas undertakings witnessed a demonstration of the new coupling at the Eastbourne Works, where they were welcomed by Mr. S. E. Knowles (General Manager and Secretary) and Mr. S. W. Hammond (Engineer and Works Manager), while Mr. Vickers, representing the makers of the coupling, was also there to explain the technical points.

The essence of this method of repairing a fractured main is essentially speed and simplicity, and the actual demonstration showed that a squad of six men could complete the job in little over six minutes from arrival on the scene. It is, perhaps, appropriate at this juncture to offer a special word of commendation to the six members of the Eastbourne Gas Company's works staff for the speed and efficiency with which they carried out the repair.



End-on view of repair section with rubber sealing ring inflated. The air connexion and "runner" to keep the repair section clear of the bottom of the main are clearly shown.

The sections which actually bridge the gap between the two fractured ends of the main consist, first, of two similar lengths of pipe; around one end of each is a rubber sealing tube which is inflated after insertion in the broken ends of the main by means of a motor tyre type of valve and connexion at the opposite end of the pipe. The diameter of the latter is 2 or 3 in. less than that of the main, a "runner" wheel being bolted to the inner end extending downwards beyond the end, in order to centre the pipe in the main and prevent it from lying flat on the bottom of the main. The lengths of these two repair sections are 4 ft., while to complete the "bridge" one or more plain lengths of 4 ft. are dropped in, according to the extent of the fracture, and bolted to the two initial lengths. An outlet with bolted-on cover and rubber gasket is provided at the outer end of the two principal repair sections. Rubber gaskets are also provided for bolting on the "bridging" sections. Reference to the accompanying illustrations will make these points clear.

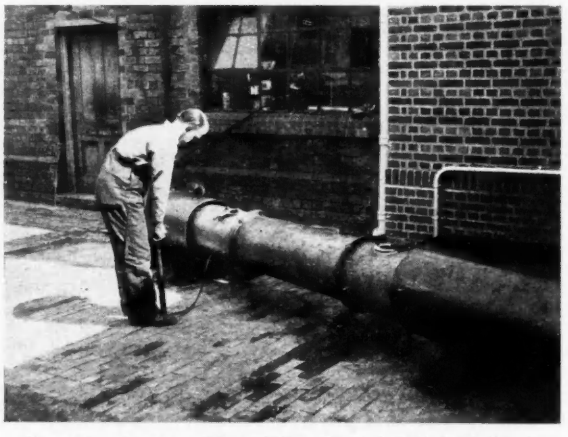
Other apparatus consists of general distribution department equipment—namely, two bladders for inserting in the broken ends of the main, hand pumps for inflating the bladders and sealing tubes, together with a cup-shaped bracket on the end of a length of ordinary barrel for pushing the bladders into the main.

Effecting the Repair.

The procedure for effecting the repair is briefly as follows: On arrival at the scene, two members of the squad wearing respirators with extension breathing tubes clear the debris from

A repair section in place while other is being inserted. The rubber sealing tube and open "manhole" through which the bladder is finally withdrawn can be seen.

the crater and insert the bladders into the broken ends with the help of the cup-shaped bracket and barrel previously referred to—passing the air feed tube and a rope which is tied round the neck of the bladder through the bracket and back into the crater.

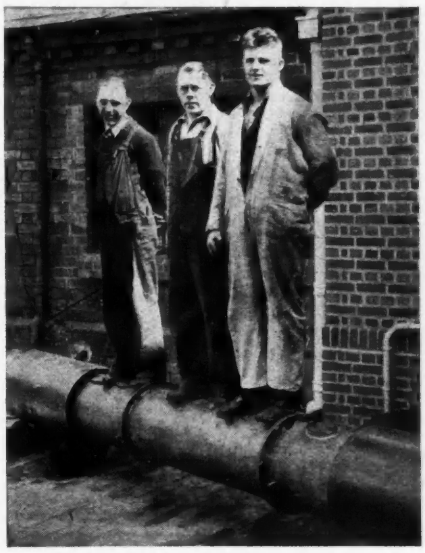


Repair sections in position while sealing tube is being inflated.

Two other men would meanwhile be inflating the bladders with the hand pumps, thus shutting off the gas.

The two principal, or end, repair sections are then lowered into the crater and the rope and air line passed through the end which is to be pushed into the main and out through the outlets which would be positioned on the top of the repair section at the other

end. One or more centre pieces are then lowered into position and bolted tight with gaskets between to complete the "bridge." Air is now pumped into the sealing tubes at the connexions provided until the whole section is rigid and gastight.



A striking demonstration of the joint's strength.

The bladders are now deflated, one at a time, and drawn out through the apertures in the end repair sections by pulling on the rope tied round the neck of the bladders. We suggest that a reverse pump is desirable for this operation in order to render the withdrawal of the bladders quicker and easier. The outlets are then sealed and bolted, and the job is complete.

Properly and quickly handled the repair could be effected without the use of bladders—though in such circumstances a considerable quantity of gas might be escaping for a short period, during which time it might be necessary for more than two men to wear respirators. In any event, the repair should not take more than about eight minutes from the time the gang arrive on the scene. With the use of bladders, only a very small amount of gas escapes while the bladders are being withdrawn through the apertures.

Although intended primarily as a temporary measure only, this repair coupling is sufficiently rigid to enable the crater to be filled in without affecting its efficiency—in which case it would safely be left for several months. If any doubts are felt in regard to the sealing tube maintaining its tightness, the air connexion could be extended to the surface—to, say, a small ground box, from which additional air could be pumped into the tube from time to time, until the main is permanently repaired.

With the "H. & C." Patent Coupling the gas engineer is safe, even if he is caught without any stocks of cast-iron main. For other than straight lengths of main the centre repair sections could be supplied in the form of bends or other specials.

Below are set out dimensions of mains together with the sizes of the appropriate repair tubes. Further particulars can, of course, be obtained from Messrs. Horseley Bridge & Thomas Piggott, Ltd., who are to be congratulated upon introducing so ingenious and effective a method of repairing a fractured gas main.

Nominal Bore of Cast Iron Pipe to be Repaired.	Internal Diameter and Thickness of Steel Repair Section.
8 in., 9 in., and 10 in.	6 in. × 16 gauge
12 in.	9½ in. × 14 gauge
14 in., 15 in., and 16 in.	12 in. × 12 gauge
18 in.	15 in. × 10 gauge
20 in., 21 in., and 22 in.	17½ in. × 10 gauge
24 in.	21 in. × 10 gauge
26 in., 27 in., and 28 in.	23 in. × 10 gauge
30 in.	27 in. × 8 gauge
32 in. and 33 in.	29 in. × 8 gauge
36 in.	32½ in. × 6 gauge
38 in.	34½ in. × 6 gauge
40 in.	36 in. × 6 gauge

Mr. Therm in Generous Mood

Prize Money to Support Big Cooker Push

A campaign is being conducted by the Severn Valley Gas Corporation, Ltd., and Gas Consolidation, Ltd., to increase sales this year of high-grade cookers by their controlled companies.

Standardization has been introduced, and each of the constituent undertakings has selected, from an approved list, the cookers they are offering for sale. For the B.C.G.A. Gas Cooker Fortnight, in March last, the slogan adopted was "For Speed in Cooking Use Gas." Special window displays and advertisement blocks were supplied by the cooker manufacturers, all incorporating this slogan, and using illustrations of racing greyhounds, motor boats, motor cars, and aeroplanes, while a fifth showed the words being blown from the mouth of a cannon. A blank disc on the right of one of these displays bore the words "Yours for 6d. a week." Great importance was attached to the use of colourful window pelmets. Cinema slides, posters, and all other publicity matter linked up with the central theme.

Immediately this effort concluded, preparations began for a further push during the period June 19 to July 31. The full co-operation of the manufacturers of the "approved" cookers has been obtained. Copies of a sales letter and competition entry form were addressed to all consumers and any other potential customers, such as users of electric cookers. The competition is of the popular type wherein eight outstanding features of the modern gas cooker have to be placed by the competitor in order of merit. A first prize of £50 is offered, with a £3 consolation prize to be won in the area of each of 39 constituent companies.

Pelmets announcing the competition have been fixed on showroom windows with arrows on either side pointing downwards to D/C two-colour reproductions of the lower front half of the entry form. Window displays and newspaper advertisements are being changed each week. The competition has already aroused much interest, and when it is concluded as much publicity as possible will be obtained from the presentation of the prizes.

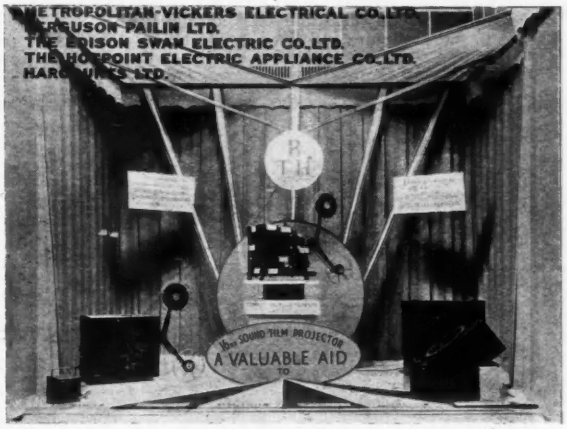
Showroom windows have been grouped according to size, so that the displays and pelmets used are a correct fit, and they are distributed by rota. Mr. W. J. Tipping, Sales and Publicity Organizer, is firmly of the opinion that the majority of window displays need a pelmet to call attention to them, and if paper is used, the cost is small.

B.T-H. Window Display

Portable Sound Film Projector

In the accompanying illustration is shown a window display at the B.T-H. Company's offices in Crown House, Aldwych, London.

The display features B.T-H. 16 mm. portable sound-film projector equipment similar to that chosen for the British Pavilion Cinema at the World's Fair, New York. In the centre a complete

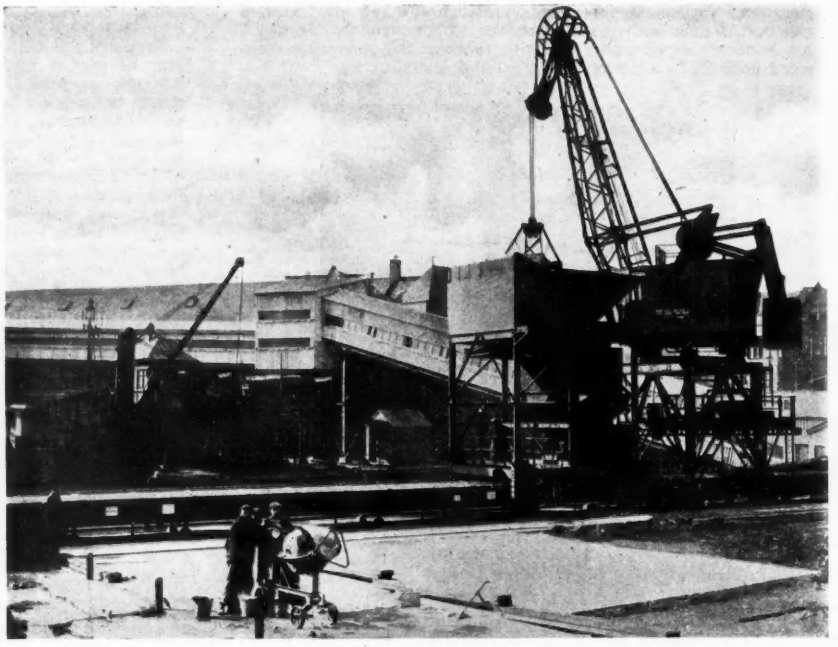


projector mechanism, with covers removed, is arranged on a revolving table, each component being clearly indicated by a label. On the left may be seen an equipment in its container, while on the right is a case containing the loudspeaker and accessories.

B.T-H. 16 mm. equipment gives sound and silent picture quality comparable with standard cinema equipment, and besides its use for entertainment is an excellent medium for education, instruction, propaganda, and advertising—and, indeed, it is being used for such purposes by the Gas Industry in ever-growing degree.

FROM the June issue of *West's Gas* we reproduce the following interesting details of the coal-handling plant at the Belfast Gas - Works — an undertaking which carbonizes up to as much as 1,200 tons of coal in one day.

COAL HANDLING PLANT AT BELFAST



A View from the North Bank of the River Blackstaff, showing beyond the Crane the Discharging End of Belt Conveyor " B," Junction House " B-C " and a portion of Belt Conveyor " C."

A GAS-WORKS of the magnitude of that at Belfast, which may be called upon to carbonize up to 1,200 tons of coal in one day, demands every facility in the handling of coal which modern advances in mechanical handling equipment can provide.

Coal handling into the bunkers in the vertical retort houses from the nearby coal stores has been effected for years, and is still very efficiently effected, by means of four West gravity-bucket conveyors, one to each of the four parallel benches, each conveyor being fed by a powerful double-roll coal breaker in a pit beneath the coal-store floor. But the coal arriving at the works is sea-borne, and is delivered in barges which come via the River Lagan to the gas-works wharves on its little tributary the River Blackstaff. Thence the coal has to be transported a considerable distance, as will be seen from the plan, to the coal stores parallel with Ormeau Road. Transport was formerly effected by means of trucks on an overhead gantry, the trucks being filled from the barges by cranes on the south bank of the Blackstaff, and then hauled to the coal store and there tipped by hand.

This system operated effectively for many years, but obviously could not continue indefinitely to cope with the rapidly increasing demands upon it. A decision was made, therefore, to replace the old system by a complete modern mechanical handling plant, automatically operated to the utmost extent practicable, to handle coal from the barges on the Blackstaff to the No. 1 coal stores adjacent to the retort houses. The scheme was very carefully studied for several months before tenders for the plant were finally invited by the Belfast Corporation in 1936, and the contract was placed early in 1937 with Messrs. West's Gas Improvement Company.

The general lay-out of the plant will be understood by reference to the drawing reproduced. As there is no room for an extensive unloading plant on the south bank of the river, it was necessary to go over to the north bank where the wharf was sufficiently long to accommodate four 100-120 ton coal barges in line. Two cranes, which can operate simultaneously, are arranged to travel on rails running the whole length of the wharf, and to grab coal from any of eight barges marshalled in two parallel lines at the wharfside. The coal is discharged normally from the grab into the receiving hopper of a travelling carriage equipped with an automatic weighing machine. One such carriage is attached to each crane in the manner described later. Thence it is fed on to a band conveyor " A " which also runs the full length of the wharf between the crane tracks.

The cranes may, however, discharge their grabs, at any desired height up to 28 ft., to a stock heap situated landward of the crane track, from which they ultimately reclaim the coal and transfer it to the hopper weighers.

Wharf conveyor " A " discharges on to a second band conveyor " B," which makes an acute angle with it and runs in an inclined girder bridging the River Blackstaff. Conveyor " B " delivers on to an overhead conveyor " C," which threads its way between existing buildings before passing on its load to a fourth

A Travelling Tripper, geared to take its motive power from the belt itself, discharges coal at any desired point along the distributing conveyor " E " in the coal store adjoining the vertical retort houses. A red light and signal bell controlled from the coal store give warning to operators at the wharfside of movements of the tripper.

conveyor "D." This band discharges on to a final band conveyor "E," traversing the whole length of the coal store. Coal can be discharged from any desired point in the length of the conveyor by means of a travelling tripper. From the coal store the coal passes to the four large existing coal breakers and is handled to the retort houses by the existing plant mentioned previously.

It is the fact that it was considered inadvisable to make any alteration to the existing coal breaking plant which gives the newly installed coal-handling plant its unique character, in that from end to end it must be able to deal with run-of-mine coal. Coal arrives at Belfast Gas-Works from many sources in a whole range of sizes. It was specified that "all sizes of coal will be handled, from small nuts to screened coal having lumps up to 18 in. long." In fact, the conveyors regularly handle mixed coal varying in size from lumps weighing as much as 140 lb. down to dust, at the rate of approximately 200 tons per hour.

At the same time, owing to the proximity of the plant to the gas-works offices, and to the main roads and adjacent property, it was necessary that special precautions should be taken throughout the plant to obviate nuisance from noise and dust as far as practicable.

Bearing in mind this general picture of the plant and the demands upon it, we can consider its elements in more detail.

Foundations.

In the first place a foundation had to be provided for the crane tracks, the work being undertaken by the Pneumatic Piling Company on the instructions of the principal contractors. The foundation consisted of two 21 in. by 36 in. reinforced concrete beams each approximately 264 ft. long, supported upon 56 patent pressure piles having a minimum diameter of 13½ in., and tied together by transverse beams at each pair of piles. A 6 in. concrete floor covered the whole area of the wharf.

Each of the two electric travelling and luffing jib cranes is capable of handling a maximum gross load of five tons at a maximum radius of 45 ft.. The minimum operating radius is 17 ft. Each can perform 50 complete cycles per hour when grabbing from barges and delivering, without luffing, to the hoppers of the weighing machine. Grabbing is possible from 16 ft. below wharf level, to allow for all heights of tide; and discharge takes place up to 28 ft. above wharf level. The four possible motions are each controlled by a separate motor. Substantial portal understructures support the cranes on heavy rail tracks, which are at 12 ft. gauge. The cranes are of Messrs. Babcock & Wilcox design and manufacture, and possess several features of special interest. When the jib is luffed the load moves in a perfectly horizontal line without the use of any compensating ropes or gear other than that arising from the simple construction of the jib and back guys. The jibs are automatically balanced in any position under all conditions of load, the luffing motion, which is actuated by cranks, being positively connected both to the jib and to the ballast. The hoisting rope is led direct from the barrel to the jib head without any reeving.

The grabs are of the Barnard four rope type, each having a capacity of 96 cu.ft. heaped and 82 flush. The width is 5 ft. 7 in. and the spread of the jaws when open 14 ft. To avoid damage to the light timber ceilings of the barges, the cutting edges of the grabs are plain.

Each crane is attached, by means of an adjustable distance bar, to a travelling carriage which supports a receiving hopper, an automatic coal weighing machine, an intermediate hopper, and a feeder conveyor for regulating the flow on to the first band conveyor of the coal discharged from the weigher. It is necessary for the distance-bar to be adjustable to obviate luffing of the crane jib once it has been set at the proper reach for dealing with a particular barge. When the distance bar is fixed at any desired point, by means of clamping gear operated from a position accessible from the crane control cabin, the weigher carriage travels with the crane. When the clamp is released the crane can be travelled to or from the carriage, within the limits of the bar.

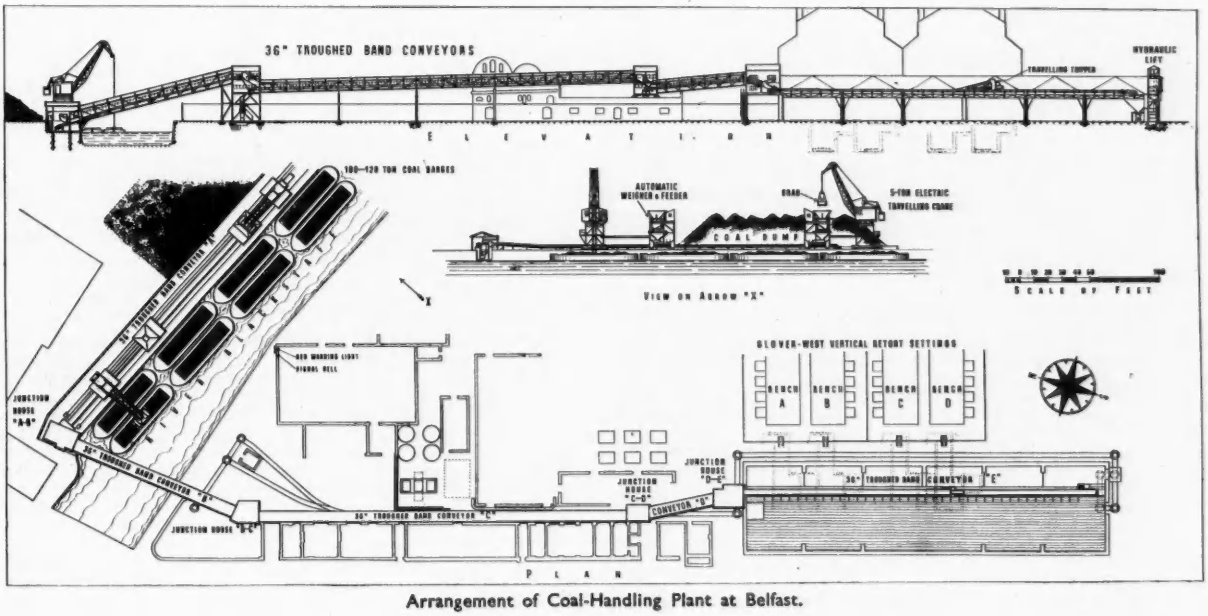
The steel plate receiving hopper on each carriage measures 14 ft. square at the top. Beneath it is an Avery automatic hopper weigher with a load range of 24 to 48 cwt. The weigher is equipped with a totalizer operated by a half H.P. electric motor, and the complete recording mechanism is housed in a weatherproof cabin.

Special Tray Feeder Conveyor.

From the weigher the coal is discharged into the intermediate hopper, whence it is fed by a tray feeder conveyor of special design. The varying range of sizes of the coals to be handled and the necessity of delivering coal simultaneously from both cranes on to a single band conveyor demanded that this feeder should be capable of accurate regulation while being of very robust construction. It consists essentially of a short endless tray composed of heavy overlapping steel plates mounted upon conveyor rollers running on angle tracks, and passing round head and tail sprocket wheels 2 ft. diameter, which is about the minimum conveniently practicable. The conveyor is driven by a 3 H.P. motor working at 720 r.p.m. The motor is connected to the driving shaft through a system of enclosed reduction gearing which incorporates a 12 in. variable speed gear. A range of from 3 to 6 r.p.m. is thereby obtained at the driving shaft. Consequently, the trays can be regulated to any desired rate of feed between 18 and 36 ft. per minute merely by rotation of the handwheel on the variable speed gear.

The centres of the head and tail drums of the wharf band conveyor "A" are about 265 ft. It is provided with wind boards along its full length, and with a continuous metal trough to facilitate loading from the travelling feeder conveyor.

This and all the succeeding bands are 36 in. wide, of rubber and cotton duck Dunlop belting 6 plies thick, complying with the British Standard Specification for grade "A" belting to meet severe conditions. The bands are supported on idlers each consisting of five pulleys which form the trough, the pulleys running in ball bearings. Arrangements are made for the grease gun lubrication of the five sets of bearings in each idler from one side of the conveyor.



Arrangement of Coal-Handling Plant at Belfast.

The bands return over single parallel idler rollers, and a light plate decking, carried on the channel stringers which support the whole of the bearings, protects the inner side of the returning strand from falling dirt.

Conveyors "A," "C," and "E" are driven by 12 H.P. motors to ensure interchangeability of parts and minimize the stock of spares. Conveyor "B" on account of its inclination to the horizontal requires a 15 H.P. motor, and a 7 H.P. motor drives the short conveyor "D." The motors are of the totally-enclosed dust and weatherproof type suitable for arduous gas-works duties.

Conveyor "A" runs at a speed of 200 ft. per min. To obviate the danger of congestion at feed points the usual expedient is adopted of graduating the speeds of the conveyors slightly upwards, so that the succeeding conveyors "B," "C," "D," and "E" run at 205, 210, 215, and 220 ft. per min. respectively.

Wharf band conveyor "A" delivers on to conveyor "B," which, as has been pointed out, makes an acute angle with it. The problem of feeding from the one to the other evenly and without spillage, especially in view of the size of material, was, therefore, difficult, but it has been solved by means of a chute in the shape of part of a spiral.

The covered junction house for the driving and delivery end of conveyor "A" and the receiving end of conveyor "B" is situated partly in a watertight reinforced concrete pit sunk behind the wharf wall.

Conveyor "B," as has been mentioned, spans the River Blackstaff in a lattice girder inclined at a sufficient angle to enable succeeding conveyors to clear existing buildings. The centres of the drums are about 135 ft., and an anti-runback device is fitted, in view of the inclination, in case of stoppage under load. A platform with a clear width of 39 in. runs the length of the girder.

The long conveyor "C," about 270 ft. between drums, runs in lattice girders carried partly on trestles placed with due regard to clearances required on the gas-works roadways, and partly from the walls of existing buildings.

The shortest conveyor "D," running at about 85 ft. centres, is also supported in a lattice girder and delivers the coal finally to the distributing conveyor "E" in the coal store. In the several junction houses which contain the driving and delivery ends of successive conveyors, both the conveyor ends and the intermediate chutes are designed to effect satisfactory transfer of the unruly material.

The girders for conveyors "B," "C," and "D" are covered in grey Everite asbestos sheeting with continuous glazing 2 ft. deep along both sides. Floors are in general of timber, 3 in. thick for the walking ways and 1½ in. under the conveyors.

The conveyor "E" in the coal store is about 260 ft. long, and is supported partly on the walls of the building and partly on new steel trestles. The travelling motion for the tripper, by means of which coal is discharged from this conveyor at any point in its length, is operated by the belt itself. The lower belt drum on the tripper may at will, by means of a lever, be thrown into gear, either forward or reverse, with the travelling motion which it operates through a system of enclosed bevel and worm gearing.

A three-way chute mounted on the tripper and equipped with hinged diverting plates enables coal to be discharged to either side, or forward again to the belt for discharge over the end of the conveyor.

The electrical equipment and controls have been laid out with careful attention to all details which can facilitate the efficient operation of the plant, and are at the same time of robust design to withstand severe conditions with the essential reliability. All the usual electrical safety devices are included.

The controls for the band conveyors are provided with sequence interlock equipment, so that it is impossible to start the conveyors in any other order than the reverse—*i.e.*, "E" first and in succession to "A" so that each band is in motion before coal is fed to it. Safety push-buttons are provided in an ample number of convenient places to enable the whole plant to be stopped in case of emergency.

While the position of the travelling tripper in the coal store is being changed the flow of the coal is interrupted for a few minutes, and it is necessary expeditiously to inform the crane operators when this is to be done. Accordingly, a conspicuous red signal light and a warning bell are mounted, facing the unloading wharf, on the buildings on the opposite side of the river. The signals are operated from convenient places in the coal store.

The hydraulic hoist noted on the general arrangement drawing replaced a hoist which was a unit of the old plant. Portions of the old coal-handling system are retained for use between coal stores Nos. 1 and 2 and for emergencies. A short low "tunnel" to receive tipping wagons is, therefore, constructed at the end of coal store No. 1. In the tunnel roof is a hydraulically operated door through which the wagons are filled. They are then hauled to the hoist to be lifted to the existing overhead gantry. The hoist has a capacity of two tons and is of the suspended type. It is operated by hydraulic power at 700-750 lb. per sq. in.

The new coal-handling system has now been in operation for a sufficiently long period to establish the fact that in it the Belfast Gas Undertaking possesses equipment which compares with the best of modern mechanical handling plant, and which, as regards the range and variety of sizes of coal with which it deals, is perhaps unique among gas-works coal-handling plants (indeed possibly among all such plants) of similar capacity and extent.

Athletic and Social

Cochran's Outing.

Employees and friends of Messrs. Cochran & Co. (Annan), Ltd., were entertained on July 8 by the firm to a picnic and programme of sports at Kimmeter Green Park, when 1,620 adults and 580 children were present. Among those who attended were Messrs. R. R. Stokes, M.P., Managing Director; L. R. Broome, Director; Mr. C. Hugh Crompton, Director; Mr. R. B. Lamb, Assistant Managing Director; Lady Lamb; Mr. E. F. MacClafferty and Mr. H. Thomson, Manchester; and Messrs. R. C. Dudgeon, W. S. Ratcliffe, and A. C. Allen, London. It was announced that a bonus of 47 hours' pay would be given to all time-rated workers on July 14 and that a bonus to other members of the staff would be considered when the firm's accounts for the year were completed.

Houghton-le-Spring Presentations.

Presentations to Messrs. David Simm and Anthony Y. Black, employees of the Houghton-le-Spring District Gas Company, who are retiring at the age of sixty-five on pensions from the Company, were made on Friday evening, July 7, at a dinner and smoking concert in the Lambton Castle Hotel, Philadelphia, Durham.

Mr. G. W. Martin, Engineer and Manager of the Company, in handing over gifts from their colleagues of aneroid barometers suitably inscribed, spoke of the 42 and 15 years' service rendered respectively by Messrs. Simm and Black and also conveyed the best wishes of their workmates. He was supported by Mr. S. Gould, on behalf of the Company's Sports Club members. The recipients thanked the Company for their pensions and the staff for their gifts.

A vote of thanks to the Chairman and Directors of the Company for their support of the function was moved by Mr. T. Jefferson, Works Attendant. Mr. Martin responded, expressing the wish that the employees would continue to give their splendid service to the public and the Gas Undertaking they served, and on behalf of the Company he thanked the gathering for their appreciation of the generous support given by the Directors.

Best wishes were accorded Mr. K. Stainbank, youngest employee, who is joining the R.A.F., and sympathetic reference was made to the absence through illness of Mr. J. Tindale (Foreman).

During the evening Greetings Telegrams were received from the Directors and Secretary of the Company.

A most enjoyable evening was spent by all. Mr. Suthern presided over the harmony which was provided by Messrs. Moss, Hogarth, Hall, Jefferson, Hodgson, and Stainbank, all employees of the Company.

Plymouth and Stonehouse Sports.

The annual sports of the Plymouth and Stonehouse Gas Light and Coke Company's Recreation Club, held at Longbridge, Marsh Mills, on Saturday, July 15, were witnessed by a larger crowd of spectators than usual. Notwithstanding the recent heavy rain the ground was in good condition, and although no records were broken good running was seen in several of the events. Perhaps most popular of the items in the programme were the tugs-of-war between departments for the Bolton championship cup. This was won by the Distribution Department, on behalf of which it was received by Mr. A. R. Langford from the hands of Mrs. G. H. Bolton, who distributed the prizes. The sports officials included Mr. G. H. Bolton as starter, Messrs. E. Llewellyn, A. B. Conway, H. C. Widlake, A. R. Langford, and W. J. Walters as judges, Mr. G. Hine as recorder, and Messrs. W. Quiller and T. Coombes as timekeepers.

The Institution of Gas Engineers

RESULTS OF 1939 EXAMINATIONS

The undermentioned Candidates were successful in the 1939 Examinations in Gas Engineering (Manufacture), Gas Engineering (Supply) and Gas Supply of The Institution of Gas Engineers, held under the Education Regulations of The Institution of Gas Engineers, as approved by the Government Education Departments of Great Britain and Ireland, and the City and Guilds of London Institute.

The Results do not include Candidates (*a*) who withdrew before the Examination, or (*b*) who, having Second Class Certificates, re-sat and failed to secure First Class Certificates, or (*c*) whose Examination has not been completed, or whose Ancillary Subject Results have not yet been received.

Appended is the Report of the Board of Examiners on the 1939 Examinations.

Comparative Statistical Schedule of the 1938 and 1939 Examination Results.

Examinations.	1938.					1939.				
	First Class with Distinction.	First Class.	Second Class.	Failed.	Total.	First Class with Distinction.	First Class.	Second Class.	Failed.	Total.
External—										
Diploma in Gas Engineering (Manufacture) ..	—	6	10	9	25	—	5	15	4	24
H.G. Gas Engineering (Manufacture)	—	6	17	5	28	1	3	13	7	24
O.G. Gas Engineering (Manufacture)	—	3	19	14	36	—	3	19	13	35
O.G. Gas Engineering (Manufac.) (single subject)	—	1	2	—	3	—	—	1	4	5
Diploma in Gas Engineering (Supply)	—	1	—	2	3	—	1	—	1	2
H.G. Gas Engineering (Supply)	—	9	6	1	16	—	2	10	7	19
Certificate in Gas Supply	—	2	3	1	6	—	—	3	—	3
O.G. Gas Engineering (Supply)	3	8	10	5	26	—	4	14	9	27
O.G. Gas Engineering (Supply) (single subject)	—	9	3	1	13	1	4	6	—	11
Internal—										
H.G. Gas Engineering (Manufacture)	—	13	31	11	55	—	7	18	19	44
O.G. Gas Engineering (Manufacture)	6	20	22	14	62	2	12	23	17	54
O.G. Gas Engineering (Manufac.) (single subject)	—	4	3	1	8	—	6	—	2	8
H.G. Gas Engineering (Supply)	4	8	8	12	32	1	15	37	20	73
Certificate in Gas Supply	—	4	37	8	49	1	—	7	4	12
O.G. Gas Engineering (Supply)	8	25	67	43	143	7	19	49	28	103
O.G. Gas Engineering (Supply) (single subject)..	5	6	3	—	14	—	4	8	1	13
Total	26	125	241	127	519	13	85	223	136	457

EXTERNAL CANDIDATES (98)

Diploma in Gas Engineering (Manufacture) (20)

Class.	Name.	Town.	Subject of Thesis.
First ..	Bairstow, R. ..	London	"An Investigation of the Effect of Atmospheric Conditions on the Behaviour of M.A.N. Waterless Gasholder Pistons".
,, ..	Foster, D. A. ..	Wellingborough..	"An Investigation into the Relative Advantages and Disadvantages of Retaining Steam as Against Electricity as a Means of Power Transmission on a Gas Works".
,, ..	Hudson, R. A. ..	London	"Lubrication on a Gas Works".
,, ..	Simpson, J. K. ..	Shanghai.. ..	"A Gas Works Involved in Modern Warfare".
,, ..	Stokes, S. H. ..	Elland	"The Economic Utilization of Unscreened Coke Breeze".
Second ..	Balsom, S. E. ..	Lowestoft ..	"The Production of Road Tar and Tar Mixtures at a Gas Works".
,, ..	Brake, N. T. ..	Southampton ..	"The Comparison of Water-Tube and Atmospheric Condensers".
,, ..	Clapham, T. W..	Bristol	"The Selection, Design and Erection of a 1,500,000 Cu.Ft. Capacity Gasholder and Foundations".
,, ..	Farnworth, E. N.	Lytham	"The Progress Made with the Physical and Chemical Survey of the National Coal Resources Viewed from the Standpoint of a Gas Engineer".
,, ..	Field, E. B. ..	Blackburn ..	"A Method of Water Gas Control Enabling the Technical and Economic Aspects to be Correlated".
,, ..	Freshney, C. E. N.	Paisley	"The Utilization of Waste Heat for the Cracking of Oil for Enrichment Purposes".
,, ..	Fulton, J. H. ..	Glasgow	"The Economical Disposal of Ammoniacal Liquor".
Second ..	Garside, R. B. ..	Grantham ..	"The Construction and Erection of a 1,500,000 Cu.Ft. Capacity Spiral Guided Gasholder in Steel Tank on Piled Reinforced Foundations".
,, ..	Matthews, N. ..	Bolton	"The Control and Maintenance of Continuous Vertical Retorts with a View to Maximum Efficiency and Life".
,, ..	Richmond, E. H.	London	"The Design of a Modern Gas Works".
,, ..	Speers, J. A. ..	Preston	"The Selection of Iron Oxide for Gas Purification and a Consideration of Its Working Conditions".
,, ..	Sumner, P. ..	St. Helens ..	"The Selection, Design and Erection of Dry Purification Plant with Special Observations on Foundations".
,, ..	Topping, J. ..	Carlisle	"Some Aspects of Dry Purification".
,, ..	Waller, F. B. ..	Bletchley ..	"The Design and Layout of a Reconstructed Gas Works".
,, ..	White, W. H. ..	London	"Some Factors of Work and Workmanship in Gas Works Design and Construction".

Higher Grade Certificate in Gas Engineering (Manufacture) (17)

Class.	Name.	Town.
First	*Ashworth, S.	Darwen
,, ...	Benstead, T. W.	Derby
,, ...	Bursey, R. H. H.	Exmouth
,, ...	Meade, S. G.	Newport, Mon.
Second	Charles, E. F.	Leamington Spa
,, ...	Clayfield, J. A.	Cirencester
,, ...	Clennett, R.	West Hartlepool
,, ...	Derbyshire, K.	Bangor
,, ...	Garrie, D. N.	Tayport
,, ...	Henry, J. A.	Doncaster
,, ...	Holland, J.	Stockport
,, ...	Huxham, S. C.	Ilfracombe
,, ...	Ivens, R.	Weston-super-Mare
,, ...	Mason, C. H.	Wellingborough
,, ...	Mort, L. B.	St. Annes-on-Sea
,, ...	Mulholland, J.	Hull
,, ...	Rich, J. B.	Torquay

* With Distinction

Ordinary Grade Certificate in Gas Engineering (Manufacture) (22)

Class.	Name.	Town.
First	Atkins, L. W.	Reading
,,	Fleming, J. B.	Dumbarton
,,	Parker, J.	Darwen
Second	Alsop, C. J.	Northampton
,,	Armstrong, W. R.	Belfast
,,	Brownlee, J.	Newcastle-upon-Tyne
,,	Burton, E. W.	Pontefract
,,	Davies, A. J. P.	Harrogate
,,	Hansford, L.	Andover
,,	Hargreave, J. L.	Berkhamsted
,,	Harris, D. G.	Clevedon
,,	Heggen, R.	Holyhead
,,	Hill, R.	Lancaster
,,	Kean, T.	Kidderminster
,,	Le Breuilly, O. P.	Jersey, C.I.
,,	Messenger, E. I.	Workington
,,	Reed, T. A.	Kendal
,,	Robertson, R. W.	Penrith
,,	Turner, A. R.	Boston
,,	Walshaw, A. E.	Dewsbury
,,	Watson, S. A.	Newcastle-upon-Tyne
,,	Williams, A. S.	Bognor

Diploma in Gas Engineering (Supply) (1)

Class.	Name.	Town.	Subject of Thesis.
First	Hepworth, J.	Sale	"The Utilization of Town Gas for the Bright Annealing of Copper".

Higher Grade Certificate in Gas Engineering (Supply) (12)

Class.	Name.	Town.
First	Blane, D. F.	Bletchley
,,	Howe, W. L.	Beeston
Second	Ashman, W. L.	Gosport
,,	Bairstow, R.	London
,,	Bates, E.	Stalybridge
,,	Benyon, F. E.	Burnley
,,	Edwards, E. J.	Enfield
,,	Siddons, V. J. J.	Sheffield
,,	Simpson, E.	Burnley
,,	Venn, D. P.	Bristol
,,	Wimhurst, J. C.	Newcastle, Staffs.
,,	Wright, J. A.	Rickmansworth

Certificate in Gas Supply (3)

Class.	Name.	Town.
Second	Fryer, F. H.	Nelson
,,	Hulme, S.	Stoke-on-Trent
,,	Stewart, W. C.	Cannock

Ordinary Grade Certificate in Gas Engineering (Supply) (18)

Class.	Name.	Town.
First	Fleming, J. B.	Dumbarton
,,	Hindle, C.	Nelson
,,	Hooper, J. A.	St. Austell
,,	Wright, L. S.	Stoke-on-Trent
Second	Bowden, K. L.	Stockport
,,	Cartledge, H.	Barnsley
,,	Fairman, J. R.	Southampton
,,	Hacon, J. S.	Lodden
,,	Hammon, L. F.	Weston-super-Mare
,,	Harvey, F.	Loughborough
,,	Herbert, W. H.	Bristol
,,	Higgs, F. C.	Swindon
,,	Holland, J.	Stockport
,,	Lewery, N. J.	Cheltenham
,,	Mason, C. H.	Wellingborough
,,	Sladdin, G.	Halifax
,,	Spiller, W. J.	Paignton
,,	Ward, A.	Skipton

Ordinary Grade (Single Subject) Examination in Gas Engineering (Supply) to qualify to sit for the Diploma Examination in Gas Engineering (Manufacture) (5)

Class.	Name.	Town
First	*Bowles, F.	Bristol
,,	Hudson, R. A.	London
,,	Jones, K. E.	Newcastle, Staffs.
,,	Pask, W. A.	Oldham
,,	Taylor, J. B.	Bristol

* With Distinction

INTERNAL CANDIDATES (208)

Higher Grade Certificate in Gas Engineering (Manufacture) (25)

Class.	Name.	Centre.
First	Cashmore, G. E.	Birmingham
,,	Davis, A. S.	Sir John Cass
,,	Downs, F. S.	Regent Street
,,	Keywood, H. C.	Leicester
,,	Kilvert, J. R.	Sheffield
,,	Smale, A. W.	Sir John Cass
,,	Wilkinson, B.	Regent Street
Second	Bannister, J. A.	Leeds
,,	Beake, R. C.	Bath
,,	Bennett, P. V.	Regent Street
,,	Cousens, D. F.	,, ,,
,,	Daniels, F. R.	Manchester
,,	Date, D. W.	Bath
,,	Goodison, H.	Sheffield
,,	Jennings, G. P.	Manchester
,,	Jones, R.	Liverpool
,,	Munro, G.	Glasgow
,,	Nicholls, I.	Sheffield
,,	Nicholls, P. N.	Birmingham
,,	Plimsoll, J. H.	Derby
,,	Robertson, T.	Kirkcaldy
,,	Smith, F.	Sheffield
,,	Spry, J. G. T.	Plymouth
,,	Stirling, T.	Glasgow
,,	Vose, G. E. D.	Birmingham

Ordinary Grade Certificate in Gas Engineering (Manufacture) (37)

Class.	Name.	Centre.
First	Bissell, J. S.	Halifax
,,	Casson, L.	,,
,,	Cole, A.	Bradford
,,	Davies, H.	Birmingham
,,	Dow, D. C.	Glasgow
,,	*Guiver, I. W.	Westminster
,,	Hancock, J. G.	Manchester
,,	Judd, S.	Regent Street
,,	Knox, J. A.	Kirkcaldy
,,	*Mountjoy, L. J.	Regent Street
,,	Philp, D.	Kirkcaldy
,,	Smith, R. B. J.	Bath
,,	Steels, K. D.	Manchester
,,	Warrington, G.	,,
Second	Ashworth, J. D.	,,
,,	Belshaw, S.	,,
,,	Bignell, V. A. T.	Westminster
,,	Briggs, R. D.	Brighton
,,	Campbell, C. A.	Glasgow
,,	Craven, K.	Manchester
,,	Davidson, N. R.	Glasgow
,,	Foster, L.	Derby
,,	Fraser, W. C.	Kirkcaldy
,,	Geall, D. G.	Brighton
,,	Harrison, B. H.	Leicester
,,	Herbert, K.	Manchester
,,	Hyde, H. W.	Regent Street
,,	Laycock, K. E.	Bradford
,,	McMillan, J.	Kirkcaldy
,,	Naylor, H.	Halifax
,,	Parker, F. P.	Brighton
,,	Potter, G. H.	Birmingham
,,	Reynolds, S. G.	,,
,,	Ridgard, A. A.	Regent Street
,,	Sorley, J.	Glasgow
,,	Taylor, J. A.	Manchester
,,	Walker, A.	Glasgow

* With Distinction

Ordinary Grade (Single Subject) Examination in Gas Engineering (Manufacture) to qualify to sit for the Diploma Examination in Gas Engineering (Supply) (6)

Class.	Name.	Centre.
First	Claydon, S. E.	Birmingham
,,	Dawson, F.	Huddersfield
,,	Grimshaw, H.	Manchester
,,	Nangle, J.	,,
,,	Ramsey, C. M.	Westminster
,,	Whitehead, H.	Huddersfield

Higher Grade Certificate in Gas Engineering (Supply) (53)

Class.	Name.	Centre.
First	Arnold, C. P.	Westminster
,,	Bremner, H. J.	,,
,,	Buxton, R. W. C. O.	,,
,,	Claxton, G. F.	,,
,,	Claydon, S. E.	Birmingham
,,	Gaunt, J. G.	Bradford
,,	Hedges, A. F.	Westminster
,,	Houston, W. T.	,,
,,	Lock, H. W.	,,
,,	Madge, G. H. W.	,,
,,	*Mayo, A. F.	,,
,,	Oake, R.	,,
,,	Parnall, W. M. K.	,,
,,	Pearson, C.	,,
,,	Swann, A. J.	East Ham
,,	Wright, H. T.	Westminster
Second	Baxendale, J. de V.	Bradford
,,	Brewer, F. J.	Westminster
,,	Carpenter, F. C.	,,
,,	Clarke, J. E.	Newcastle-upon-Tyne
,,	Dawson, F.	Huddersfield
,,	Evans, J. H.	Birmingham
,,	Garnham, D. W.	Westminster
,,	Gaunt, D.	Bradford
,,	Gower, R. A.	Westminster
,,	Green, J. H.	Bradford
,,	Griffiths-Jones, M. A.	Westminster
,,	Groves, D. F. W.	,,
,,	Hamer, E. J. G.	,,
,,	Heaton, A.	Huddersfield
,,	Harding, S. C.	Westminster
,,	Henrys, R. E.	,,

Class.	Name.	Centre.
Second	Hodgkinson, P. B.	Birmingham
,,	Holgate, H. W.	Westminster
,,	Jennings, A. P.	Bradford
,,	Jennings, Miss S. C.	Westminster
,,	Kimber, M. S.	,,
,,	Layton, W. H.	,,
,,	Lynch, W. J.	,,
,,	Mance, W. H.	,,
,,	Marson, E. H.	,,
,,	Mason, J. I.	Bradford
,,	Medhurst. W. E.	Westminster
,,	Millington, H.	Manchester
,,	Pears, G. E.	Westminster
,,	Pegg, E. E.	,,
,,	Pink, D.	,,
,,	Riley, H. P.	,,
,,	Robinson, A.	Bradford
,,	Smith, W. G.	Birmingham
,,	Spencer, C. J. A.	Westminster
,,	Toller, G. H.	,,
,,	White, A. W.	,,

* With Distinction

Certificate in Gas Supply (8)

Class.	Name.	Centre.
First	*Gosling, R. G.	Westminster
Second	Anderson, J. A.	Edinburgh
,,	Irvin, S. G.	Newcastle-upon-Tyne
,,	Lockwood, F. W.	East Ham
,,	Perriss, C. E.	Westminster
,,	Sage, E. R.	Dundee
,,	Tandy, C. W. A.	Westminster
,,	Wilson, J. F.	Dundee

* With Distinction

Ordinary Grade Certificate in Gas Engineering (Supply) (75)

Class.	Name.	Centre.
First	*Abbott, H. S.	Westminster
,,	*Brown, J. C.	East Ham
,,	*Carder, W. H.	South East London
,,	Colley, T. N.	Birmingham
,,	Creswick, L. D.	East Ham
,,	*Cutlack, E. B.	Westminster
,,	Dow, D. C.	Glasgow
,,	Fearon, J.	Westminster
,,	Gibson, H. L. G.	Liverpool
,,	*Good, F. G.	East Ham
,,	Greenway, N. H.	Cardiff
,,	Haugh, R. J.	Liverpool
,,	Kemp, G. H. C.	Westminster
,,	Knox, J. A.	Kirkcaldy
,,	Moore, C. G. E.	Westminster
,,	Moore, M. J.	,,
,,	Parsfield, L. W.	East Ham
,,	*Perriss, S.	Westminster
,,	Phillips, A. L.	,,
,,	*Philp, D.	Kirkcaldy
,,	Pinder, W. E.	Bradford
,,	Riches, J.	Westminster
,,	Ross, A. A.	,,
First	Saggers, R. F. E.	Westminster
,,	Sorley, J.	Glasgow
,,	Spriggs, L.	East Ham
Second	Brook, D. G.	Huddersfield
,,	Bruce, R. D.	Westminster
,,	Campbell, C. A.	Glasgow
,,	Campbell, I.	,,
,,	Cartwright, V.	Stoke-on-Trent
,,	Cattlin, D. W.	South East London
,,	Cavanagh, T.	Cardiff
,,	Cobb, G.	Dundee
,,	Cosh, J. H.	South East London
,,	Davidson, N. R.	Glasgow
,,	Dunn, F. J.	Wandsworth
,,	Eales, L. J.	Westminster
,,	Fraser, W. C.	Kirkcaldy
,,	Gay, W. G.	Wandsworth
,,	Hale, J. A.	Westminster
,,	Harris, H. G.	Birmingham
,,	Hill, J. W. C.	Wandsworth
,,	Hodgson, L.	Burnley
,,	Hudson, K. W.	,,
,,	Illingworth, G. F.	Leeds
,,	Irving, J. C. P.	Liverpool
,,	Lee, T. D.	Bradford
,,	Luck, S. J.	South East London
,,	MacEwan, A. D.	Wandsworth
,,	McMillan, J.	Kirkcaldy
,,	Middleton, D.	Huddersfield
,,	Mitchell, W. E.	Birmingham
,,	Moorcroft, W.	Liverpool
,,	Morrison, G.	Huddersfield
,,	Morrison, J. J.	,,
,,	Park, D. V.	Leeds
,,	Pierce, A. E.	Liverpool
,,	Podmore, J. P.	Stoke-on-Trent
,,	Reynolds, F. E.	Birmingham
,,	Rider, P.	Huddersfield
,,	Rudd, C. G.	Birmingham
,,	Search, J.	Liverpool
,,	Sharrock, B.	Birmingham
,,	Sleigh, D. P. F.	Westminster
,,	Smith, D. E.	,,
,,	Soutar, D. W. I.	East Ham
,,	Warburton, R. G.	Westminster
,,	Wardell, R. D.	,,
,,	Watson, R. W.	Birmingham
,,	Webber, R. P. A.	Westminster
,,	Welch, W. H.	,,
,,	Wellard, R. J.	Canterbury
,,	Williams, P. F.	Westminster
,,	Winter, K. R.	,,

* With Distinction

Ordinary Grade (Single Subject) Examination in Gas Engineering (Supply) to qualify to sit for the Diploma in Gas Engineering (Manufacture) (4)

Class.	Name.	Centre.
First	Baker, M.	Birmingham
,,	Johns, F. S.	Cardiff
,,	Johnson, B. W.	Liverpool
,,	White, D. N. W.	Birmingham

1939 REPORT OF THE BOARD OF EXAMINERS

The Board of Examiners has pleasure in submitting to the Gas Education Committee, for presentation to the Council of The Institution of Gas Engineers, its Report on the 1939 Examinations held under the Education Regulations of the Institution.

During the year 1938-39, the members of the Board of Examiners and the Assessors, appointed by the Council were:—

Major Courses.

Examiners: S. E. Whitehead, J.P., B.Sc. (Southampton: Chairman), J. M. Campbell, J.P. (Margate), T. Carmichael, J.P., M.Inst.C.E., M.I.Mech.E. (Portsmouth), E. Crowther, M.Eng., A.M.Inst.C.E. (Newcastle-upon-Tyne), A. Marsden, M.Sc. (Bristol), and H. Moys, B.Sc., A.M.Inst.C.E. (London)—Gas Engineering (Manufacture). W. A. Bishop (Croydon), D. Chandler (London), W. Dieterichs (London), H. J. Escreet, B.Sc., A.M.Inst.C.E. (London), J. A. Gould, M.C. (London), H. R. Hems (Birmingham), E. F. Keable (Great Yarmouth), and W. L. S. Spinks (Birmingham)—Gas Engineering (Supply).

Assessors: England and Wales: E. Crowther, M.Eng., A.M.Inst.C.E. (Newcastle-upon-Tyne)—Gas Engineering (Manufacture); W. A. Bishop (Croydon)—Gas Engineering (Supply). West of Scotland: David Fulton (Helensburgh) and A. S. Nisbet (Paisley)—Gas Engineering (Manufacture) and Gas Engineering (Supply). East of Scotland: J. Jamieson (Edinburgh) and J. W. Napier (Alloa)—Gas Engineering (Manufacture) and Gas Engineering (Supply).

Minor Course and Gas Fitting Courses.

Examiners: E. F. Keable (Great Yarmouth)—Gas Supply Practice; R. N. LeFevre (London), A. G. R. Kennett (Margate), and J. Robertson (London)—Gas Fitting; G. W. Hefford (St. Leonards-on-Sea)—Elementary Science.

S. E. WHITEHEAD,
Chairman,
Board of Examiners.

W. T. K. BRAUNHOLTZ,
Secretary,
The Institution of Gas Engineers.

1, Grosvenor Place,
London, S.W.1.
28*th June*, 1939.

Gas Engineering (Manufacture)—Ordinary Grade.
Internal Candidates.

The general standard attained by candidates in the 1939 Examination in Ordinary Grade Gas Engineering (Manufacture) was very satisfactory and their information was more

detailed than in previous years. Teachers appear to be successful in conveying to students an appreciation of the underlying principles upon which the practice of Gas Engineering is founded, resulting in the questions being answered in a logical and clear manner. There was an improvement, too, in the sketching submitted. There was a tendency in the selection of questions by candidates to emphasize the chemical aspects of the practice of Gas Manufacture at the expense of the engineering aspects

External Candidates.

The general standard of Papers submitted by External Students in Ordinary Grade Gas Engineering (Manufacture) was slightly above average, 5 of the 30 candidates obtaining a first class and 12 a second class pass. Here again the engineering knowledge displayed in candidates' answers was poorer than the chemical knowledge. In several cases marks were lost by the careless reading of questions while in others sketches were inaccurate, an indication of superficial knowledge.

Gas Engineering (Manufacture)—Higher Grade.
Internal and External Candidates.

The average standard of the work submitted by candidates for the Higher Grade Certificate in Gas Engineering (Manufacture) was fair, only three candidates attaining a high standard. Sketches on the whole were well done. Some candidates, however, spent too much time making detailed drawings and consequently left little time for answering the question properly. In this connexion, the attention of teachers is drawn to the importance of line diagrams. Considering the standard which students have attained in ancillary subjects it was disappointing to read many of the answers and the very poor approach to the subject matter.

Gas Engineering (Manufacture)—Diploma Grade.

The quality of the answers submitted by candidates for the Diploma in Gas Engineering (Manufacture) was generally disappointing and not up to the standard to be expected from candidates for this Examination. The general Gas Manufacturing knowledge of the candidates was good. The methodical answering of a question, that is concisely, logically and, where possible supported by figures and sketches, cannot be stressed too strongly, as there is still much to be desired in this respect.

Gas Engineering (Supply)—Ordinary Grade.
Internal Candidates.

On the whole, the work submitted by Internal Candidates for the Ordinary Grade Certificate in Gas Engineering (Supply) was good and showed that the students possessed a good knowledge of the subjects set. Most of the sketches were made in a simple and clear manner, although the sketches of students of one or two Colleges fell short of the general standard. The answers again showed that it is most desirable for one Paper to be set for all candidates.

External Candidates.

The work submitted by External Candidates for the Ordinary Grade Certificate in Gas Engineering (Supply) was generally good, 11 of the 37 candidates obtaining a first class and 21 a second class pass. Attention is drawn to the need of proper appreciation of fundamental physical laws and their application to practical problems in gas supply.

Certificate in Gas Supply.
Internal and External Candidates.

The general standard of the work submitted for the Examination for the Certificate in Gas Supply was not high, no candidate obtaining 70% in Part I and Part II and only 3 reaching 60%. There was a lack of knowledge of the practical side of distribution and the attendant problems, to which more attention should be given.

Gas Engineering (Supply)—Higher Grade.
Internal and External Candidates.

The standard of the work submitted for the Higher Grade Certificate in Gas Engineering (Supply) was poor, candidates, in general, failing to appreciate the wide scope of the questions and contenting themselves with submitting the more obvious and elementary points of Ordinary Grade standard. It appeared from the answers submitted that the students had not had sufficient tuition in the more practical aspects of utilization of gas and many were unable to work out simple calculations and to abbreviate formulæ. Some students referred to manufacturers' names when describing apparatus, and this is to be deprecated since, in a Technical Examination, students should confine themselves to technical principles and ignore any question of sales bias. Undoubtedly many candidates do not obtain the necessary personal contact with district work and, therefore, have only vague ideas of running costs, sizes, and capacities of plant. Many marks could have been saved if the candidates had read the questions carefully, set out roughly the main headings of their answers for their own guidance, and finally read through their answers before handing in their Books. More attention should be given to the development of simple line sketches.

Gas Engineering (Supply)—Diploma Grade.

There were only two candidates for the Diploma in Gas Engineering (Supply).

Minor Course Certificate in Gas Supply Practice.

The Report of the Examiners of the City and Guilds of London Institute on the 1939 Examination for the Minor Course in Gas Supply Practice indicates a distinct improvement in the general standard of answers and sketches submitted. There has also been an improvement in the brevity of the answers consistent with accuracy.

Gas Fitting Certificates.

The Report of the Examiners of the City and Guilds of London Institute on the 1939 Examinations in Gas Fitting shows that 2,137 candidates were examined as compared with 2,074 in 1938.

Women's Gas Council

Fourth Summer School for Demonstrators

This year the Summer School for Demonstrators arranged by the Women's Gas Council is to be held in Manchester, and specialists are to speak on a variety of subjects. The School will open with a reception by the Manchester Home Service Department on Friday, Sept. 1.

The serious business of the week-end begins on Saturday morning, when Miss Chadwick, of the College of Technology, Manchester, will speak on "Failures in Making and Baking," and Miss Hollings, B.A., Principal of the Central Evening School of Domestic Economy, on "Training the Demonstrator." After Mr. Edwards, Technical Specialist, Manchester Corporation Gas Department, has spoken on "Large Scale Cooking: Types of Appliances and Causes of Complaints and Defects," his audience will be shown the Town Hall canteen.

Miss Janet Mitchell, Warden of Ashburne Hall University Hostel, will address the visitors on Sunday evening.

On Monday, Sept. 4, the programme includes a demonstration of "New Ideas for Cookery Demonstrations, including Refrigeration," followed by an educational visit to the Warrington Works of Messrs. Richmonds Gas Stove Company, Ltd. In the evening Miss Weddell, B.Litt., B.A., Principal, Training College of Domestic Economy, Manchester, will contribute a Paper on "Getting it into Words."

A Session is being devoted to "New Ideas for Home Service," when Miss E. M. Morrison will explain Home Service work in Newcastle-upon-Tyne, and Mr. Bingham the developments in Leicester. Miss K. M. Halpin, Organizing Secretary of the Women's Gas Council, will speak about "Committee Procedure, and How to Run a Branch of the Women's Gas Council."

Most of the Sessions will be held at the College of Domestic Economy, Manchester, and delegates who so desire will be able to stay at Ashburne Hall University Hostel. Any demonstrator who has not already received a programme, and who wishes to attend the School, can obtain one, together with an application form, from the Organizing Secretary, Women's Gas Council, 1, Grosvenor Place, London, S.W. 1.

Southport Gas Conspiracy Case

THE trial concluded before Mr. Justice Croom-Johnson at Manchester Assizes on Wednesday last, after a hearing lasting eight days, of J. H. Clegg, Chief Engineer and Manager to the Southport Gas Department, and W. E. Plevin, Deputy Engineer, who had been accused of conspiracy in connexion with the alleged maladministration of the Undertaking. Plevin was sentenced to six months' imprisonment on three counts and to one month's imprisonment on a fourth count, the sentences to run concurrently and to be served in the second division. Plevin had pleaded "Not guilty" to five counts, and was acquitted on the fifth charge at the Judge's direction. Clegg, who had pleaded "Guilty" to one count and had had two other charges against him dropped on the direction of the Judge, was bound over for six months. On Monday morning last, however, Mr. Justice Croom-Johnson altered the sentence on Plevin to one of binding over for twelve months, saying that he was disposed to think that some of the practices at the Southport Gas-Works were not unknown elsewhere.

Reports of the Police Court proceedings appeared in the "JOURNAL" for March 1, 15, 22, and 29, April 5, 19, and 26, and May 10 and 17. Evidence at the trial followed similar lines. The charges were set out in the "JOURNAL" for Feb. 1.

In his opening statement for the prosecution Mr. Hartley Shawcross, K.C., alleged that Clegg was the official primarily responsible for the Gas Estate, so that in the submission of the prosecution he was primarily responsible for the continuance of the alleged illegal practices. "He adopted an attitude which was one apparently of keeping in the background, so much so that the chemists did not know whether he was in these matters or not," Counsel said. "Indeed, on occasions, when the chemists had direct contact with Clegg, which were not often, they told Clegg nothing about what was going on because they did not know to what extent Plevin had taken Clegg into his confidence or Clegg had taken Plevin in. There were occasions when Clegg was apparently complaining of low calorific value or this, that, and the other—complaining, but carefully refraining from taking any steps whatever which might be effective to remedy the state of affairs which he must have known existed."

Cross-examined by Mr. F. E. Pritchard, K.C. (for Clegg), C. W. A. Illingworth, Technical Assistant and Chief Chemist at the Gas-Works, agreed that he concealed things from Clegg when he (witness) was acting as Deputy Engineer.

His Lordship: Are you referring to the use of the special holder and other matters?—Yes.

Mr. Pritchard: You told the magistrates that if he had known of them, he would not have allowed them to go on?—Yes.

Even you yourself did not know the extent to which the special holder was being used?—Not at the time of the Gas Committee's investigation.

You told the Committee it had only been used on odd occasions?—Yes.

On the resumption of the case on July 10 Clegg changed his plea to "Guilty" on a charge of conspiring to contravene provisions of the Gas Undertakings Acts in regard to the quality of the gas supplied. The jury, on the direction of the Judge, then formally returned a verdict of "Not Guilty" on the other two counts.

The two counts upon which a "Not guilty" verdict was returned were alleged conspiracy to make a gas examiner test gas not truly representative of the quality ordinarily supplied by the Corporation; and conspiracy to supply gas of a lower calorific value than the declared calorific value the Corporation were under an obligation to maintain.

His Lordship said it seemed to him that the only evidence which implicated Clegg in regard to the alleged use of a special holder of gas for testing purposes by the Examiner was that of a witness Pickavant, who had spoken of a somewhat casual conversation. He (His Lordship) thought it would be unsafe to ask any jury to convict on one casual plea.

Examined by Mr. E. G. Hemmerde, K.C., Plevin said that he first became aware of irregularities in regard to the special holder in the first few weeks of his appointment. As far as he could see, it was being used on every occasion when the Gas Examiner came. "I gathered it was a matter that had been long established," he said. "They looked upon this special holder as part of the process of gas testing by the Examiner. I tried to correct this view, and expressed my disapproval of it on many occasions."

Mr. Hemmerde: Did you at any time instruct them to use it?—I have never instructed these chemists or anyone else to prepare this holder and use it for the Gas Examiner.

Was there any time when you authorized its use?—None.

Did you know it was going on?—Yes; from time to time I knew my instructions were being disobeyed.

He added that he gave a general instruction that the use of the special holder must stop and that instruction was never withdrawn.

Mr. Hemmerde: Did you ever feel it possible to stop it?—I felt it was impossible to stop a characteristic so ingrained in the staff that they could not do without it. It was part and parcel of the Gas Examiner's tests as far as they were concerned.

Did you consult with Mr. Clegg on that matter?—I consulted with Mr. Clegg on that matter on Jan. 4, 1937.

What happened then? What was it that made you consult him?—The special holder was one of a number of irregularities which I discovered.

Mr. Hemmerde: It was suggested that when you found the way things were going, you might have resigned. What do you think would have happened if you had resigned?—I would have been out of a job.

What would have happened to the plant?—That would depend on what they did at the works after I left.

Regretted He Did Not Report.

His Lordship: It is not a question of self-preservation. What strikes me is this: with all these difficulties, it would have been so simple to present a written report to your superior, drawing attention to these things?—Yes, my lord, I admit that.

This was your first job as a manager?—Yes.

It is suggested that no man in your position would have allowed these difficulties to go on without reporting them, and that because there is no report they do not exist?—There are numerous reports on various parts of the plant, pointing out the deficiencies.

Then you were reporting some of these difficulties?—Yes.

Why not report on the others?—It did not occur to me.

Mr. Shawcross, cross-examining: At the end of 1936 the figures in the calorific value book were so low you were asked to give an explanation in writing about it by Mr. Clegg, and I suggest that having discussed the matter with Mr. Clegg you and he decided to deceive the Committee about it?—That suggestion is entirely wrong. I have never entered into any undertaking to deceive the Committee.

Why did you write an explanation saying the low value was due to purification when, according to your own evidence and your verbal communication to Mr. Clegg the calorific value was not low in the sense in which it was recorded in the book and the records were all wrong?—Mr. Clegg told me he wanted the explanation for the Committee.

That is exactly what I suggested to you, that you and Mr. Clegg decided in that matter to deceive the Committee. Did you say this: "I could not very well pass a report through to Mr. Clegg to make to the Committee to the effect that inaccurate records had been made and that the low calorific value was a result of my instructions that the records were to be correct"?—Yes.

It was to deceive the Committee as to the state of affairs in the works, was it not, if, in fact, your present evidence about the real explanation is correct?—The present explanation is correct.

If it is correct you were deciding with Mr. Clegg to deceive the Committee as to the true position in the works?—I had put my explanation to Mr. Clegg.

"Both Can't Be Right."

His Lordship: Either the explanation you give to-day or the explanation you gave in January, 1937, is wrong? Both can't be right?—No.

Which do you say is untrue, your evidence to-day or the explanation you gave in January, 1937?—My evidence to-day is true.

That involves you in this, that the statement you made in January, 1937, is false?—In effect, I suppose it does.

It may be the jury will be invited to accept that what you said in January, 1937, was true. You appreciate that?—I do.

In his address to the jury, Prosecuting Counsel said that Plevin might not have been a willing and happy party but he was in fact a party to the practice of using the special holder. Once they got that position it mattered not why he did it.

Mr. Hemmerde, addressing the jury, said it was not correct, as Mr. Shawcross sought to suggest, that Plevin practically admitted the charges and merely offered evidence in extenuation. It was possible that a man might join with others who were doing things for an unlawful purpose that by doing so he would shortly be able to wreck that unlawful purpose and get things in such a condition that no one would want to work illegally.

Jury's Rider.

The jury reached their decision after deliberating for over an hour and after Mr. Justice Croom-Johnson had occupied approximately three hours in summing-up.

After stating the jury's decision, the foreman said: "I would like to add a rider. In the opinion of the jury, Mr. Plevin, during his short period at Crowlands Gas-Works, has endeavoured to do his best to improve conditions in spite of the apparent lack of co-operation of the Chief Engineer and severe opposition of many at these works, including, particularly, the four chemists, and, unfortunately, contravened the law in so doing."

In sentencing Plevin, his Lordship said he had no option but to award him imprisonment as punishment. "I appreciate," he added, "that that is going to be most disastrous, not only to you, but to those who are near and dear to you. I am going to reduce what I do to the lowest possible limits."

After binding Clegg over as stated, his Lordship said that while not in the least desiring to interfere with the discharge of a delicate task by the Corporation or the appropriate committee, he thought he was justified, in all the circumstances, in suggesting to them that they might well consider whether or not, to a man of Mr. Clegg's antecedents the trial, and the consequent expense of it, had not been punishment enough.

His Lordship, continuing, said he desired to call public attention to the fact that the regulations for safeguarding the public appeared lamentably to have broken down. He hoped those safeguards, providing for examinations and so on, would receive urgent attention and consideration from the persons upon whom that duty lay whoever they might be. Referring to the Gas Examiner's tests, his Lordship said these ought to have disclosed that the calorific value of the gas was lower than it should have been, and that the purification plant, to say the least of it, was not of the best. The Gas Examiner concerned, he was told, was a gentleman of experience, position, and high professional attainment. He had not been in court in his defence, for good reason or bad, and he (his Lordship) was not concerned with that, but he could not part from the case without saying that the evidence he had heard about the tests filled him with amazement as to the way in which it was possible the tests under the Act might be carried out.

"Whoever again is the responsible person I would desire to say that in my judgment the whole manner in which the tests have been done at this place should be made the subject of independent and impartial investigation." Mr. Justice Croom-Johnson said, "It may well be the Gas Examiner will be vindicated. He will be able to show that he has been misled at this place by servants of the Corporation who ought to have known better. Having regard to the publicity this case has received, this matter should receive proper and appropriate investigation," he concluded.

Unexpected Sequel.

There was an unexpected sequel to the case on Monday morning last when Mr. Justice Croom-Johnson altered the sentence of six months in the second division on Plevin to one of binding over for twelve months.

His Lordship, addressing Plevin and his leading Counsel, Mr. E. G. Hemmerde, K.C., said he had been keeping note of the case, which had given him a great deal of anxiety. "I hope I am not letting my own feelings interfere with my duty," he went on, "because I am disposed to think I did not pay sufficient attention to the recommendation of the jury in this case, and I regard the recommendations of juries as of the highest value and importance. If there is anything you can say to me on behalf of this man," he continued, addressing Mr. Hemmerde, "I should like you to say it."

Mr. Hemmerde: "I can hardly put it better than the admirable rider of the jury. I feel if it had been drawn up by skilled lawyers it could hardly have been better. I feel sure if your Lordship comes to the conclusion there is a case for leniency my client will show by his conduct hereafter how greatly he appreciates your action."

His Lordship referred to the case as one "of serious import," but, he continued, "on further reflection I am rather disposed to think that some of the practices at the Southport Gas-Works were not unknown elsewhere, and this enquiry and the tragic result of it may have some effect in making people engaged in public occupations of this sort appreciate more fully than, perhaps, they do at present, the duty that they owe to the public at large as well as to their immediate employers. Upon further reflection," he went on, "I read and re-read the jury's rider, and although I thought that I had dealt with you leniently, I have satisfied myself I did not deal with you as leniently as I might, or perhaps as I ought to, have done. In these circumstances, although I could have altered your sentence behind the scenes, I though it better that you should come before me in public so that I could communicate to you what I am going to do to-day.

"I propose to bind you over for twelve months in the sum of £25 to come up for judgment if called upon and to keep the peace, realizing as I do that in all probability these courts will never see you again. That is my hope," added His Lordship.

Low Temperature Carbonisation, Ltd.

Report of Directors

The Directors, in their report for the year ended March 31 last, state that the net profit on trading, with interest, dividends, and transfer fees received, amounts to £42,943. After providing for debenture interest, depreciation, taxation, and Directors' fees, there remains the sum of £814 to which is added the balance of profit brought forward from the previous year, making a total of £33,265.

The year's trading, it is stated, was adversely affected by special circumstances, which are not expected to recur. In addition, much of the new capital expenditure of the Company had not reached the earning stage and, as is often the case in bringing new works into production, the expenditure was out of all proportion to the revenue. The export trade has been badly affected by the condition of foreign affairs generally, and several important contracts have been held up. Deliveries, however, in some cases have been resumed and it is hoped that these difficulties will disappear, always, of course, providing that no fresh international complications arise.

The chief difficulty, however, with which the Company had to contend was occasioned by the fact that the output of "Coalite" from the three works in the North reached its maximum at a time when the weather conditions for the fuel trade were the worst ever recorded. The consumption of solid fuel is mainly confined to six months of the year, but in 1938 three of the months were accompanied by unusually warm weather, and in March, which was the hottest March ever recorded, the fuel trade almost ceased. The consequence was that the stocks assumed proportions which gave rise to some anxiety and it became necessary to adopt special measures for their disposal.

An extensive national advertising campaign was undertaken, and the sales organization was temporarily expanded all over the country in order that the demand should be increased to such an extent as would ensure the necessary sales figure, whatever the weather might be.

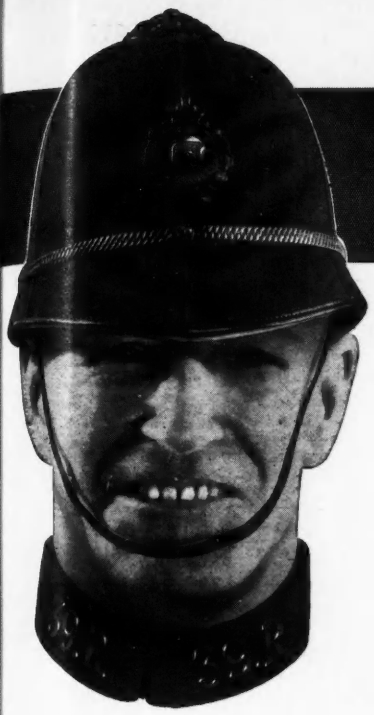
The results were entirely successful, the sales were increased by 46%, and so many new customers were created that the demand this summer has absorbed the whole of the production of the 576 retorts at Askern and Bolsover since May 1. The 160 retorts and plant at Barugh are being thoroughly overhauled and reconditioned after a non-stop run of over ten years, and will shortly be ready for operation. Providing that next winter is even reasonably normal, it is expected that the whole of the production and stocks will be absorbed, and that it will be necessary also to draw upon the output from the South Wales Works, which is now approaching completion.

The whole of this unexpectedly heavy selling expenditure has been written off, and although there will be a general advertising campaign next winter, there will be no necessity to incur a great deal of the expenditure which had to be borne last year, and, in fact, since the end of the last financial year it has been greatly reduced.

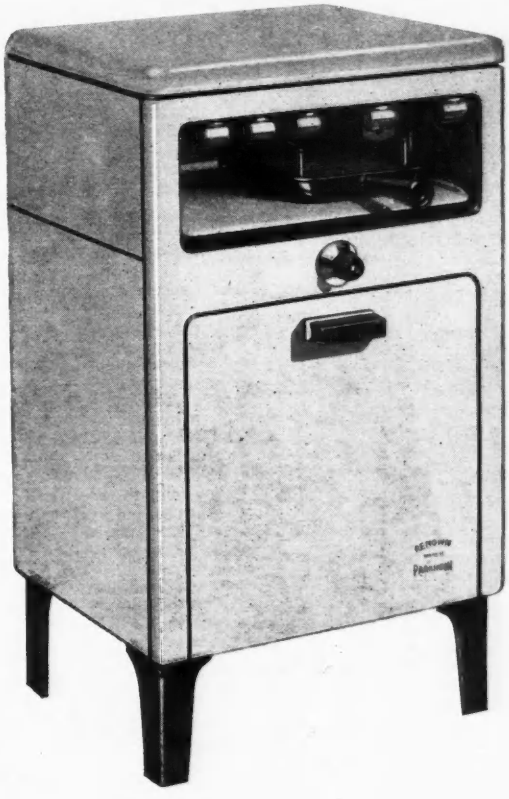
The cost of this special advertising campaign, and the research and experimental work attendant upon the bringing into operation of the new refinery, might perhaps have been spread over a period. Your Board considered it advisable, however, in all the circumstances to write it off this year, and also to maintain the allowances for depreciation at the various works at their normal level.

The refinery at Bolsover has been brought into full production. It is operated by The British Diesel Oil and Petrol Company, Ltd., a wholly-owned subsidiary of the Company.

The Directors regret that the payment of a dividend this year cannot be recommended, and it is proposed to carry forward to next year the credit balance on the Profit and Loss Account of £33,265.



Renowned for DUTY—



The continued increase in the popularity of the Parkinson 'Renown' Gas Cooker is eloquent proof of the satisfaction which it has given to consumers. This modern gas cooker which combines perfect cooking with beauty in appearance, has so well and truly won the admiration of housewives, that it is indeed the business builder of the present and the future.

The PARKINSON

RENOWN
GAS COOKER

Renowned for BEAUTY

THE PARKINSON STOVE COMPANY, LIMITED, BIRMINGHAM, 9
London Showrooms: Terminal House, Grosvenor Gardens, S.W.1

Gas Undertakings' Results

Colne.

The net profit of the Borough of Colne Gas Department for the twelve months ended March last is £2,491, which compares with £5,041 for the preceding year. There has been an increase of 2·1% in the quantity of gas sold, to 221,998,700 cu.ft. Details of consumption show a satisfactory increase in the use of gas for public lighting, while a new entry is central heating, which accounts for about 13¾ million cu.ft. The industrial consumption has been well maintained over the twelve months, at well above 19 million cu.ft. The decreased return for tar has adversely affected receipts from residuals, and little hope is entertained that the price received per ton of tar supplied to the Lancashire Co-operative Tar Scheme will improve materially in the immediate future. Two years ago, a very substantial reduction was made in the price of gas, at a time when the extraordinary increases in the price of coal and wages, and the added expenditure on superannuation, which have had to be borne, could not be anticipated. Sales effected through the showroom include four central heating boilers and 82 radiant panel heaters. The Department have joined the Lancashire and District Coke Association, by which it is hoped that existing price levels will be maintained. The price of coke has remained unaltered at 30s. per ton at the works throughout the year.

Edinburgh.

The annual report of the Edinburgh Corporation Gas Department shows a gross profit of £136,520 and a net surplus of £11,706 after meeting interest and sinking fund charges of £96,914 and income-tax, £27,900. Special expenditure met from revenue account was new service pipes, £10,200, special contribution towards depreciation of cookers and meters, £4,200, and special grant to superannuation fund, £7,800—£22,200. The average price of gas was 2s. 5·14d. per 1,000 cu.ft. (6·135d. per therm) a new low record. Gas sales, on the other hand, constituted a new high record at 4,032 million cu.ft., an increase of just over 2·13% on the previous year. Notwithstanding the increased cost of coal and other raw materials it is hoped that no increase in the price will be necessary. Appliances fitted on the district numbered 10,700 cookers, 2,700 other cooking appliances, 3,600 heating appliances, 750 water heaters, and 80 refrigerators.

Galashiels.

At the annual general meeting of the shareholders of the Galashiels Gas Light Company, Mr. G. Carruthers, Chairman, said the quantity of gas sold amounted to 116,718,400 cu.ft., compared with 111,266,200 cu.ft. last year, showing an increase of 5,452,200 cu.ft. As compared with the previous year there was an increase in the sale of gas coke by 525 tons with a consequent increase in revenue of £682. The revenue from tar products decreased by £294 compared with the previous year. The sale of gas appliances showed a substantial increase as compared with the preceding year. Although anticipating no increase in the price of gas, the Directors propose to introduce a block scale of gas charges, which will supersede the present discount system and which will apply to domestic consumers as well as to industrial consumers. The Directors have entered into an agreement with the Town Council for the renewal of the street lighting contract for a further period of ten years. The report was adopted with the usual dividend of 6%.

Heywood.

The operations of the Borough of Heywood Gas Department for the twelve months to March 31 last resulted in a net profit of £1,120, which compares with £2,996 for the preceding year. The total quantity of gas manufactured was 655,488 therms, of which 45,675 was carburetted water gas. Sales of gas amounted to 560,231 therms—a decrease of 8·07% on the previous year. Prepayment consumers took 47% of the gas consumed, and consumers for gas engines, industrial, and special purposes nearly 23%. The erection of the new installation of vertical retorts is proceeding satisfactorily, and it is expected that the plant will be in operation by next autumn. In connexion with the national defence scheme, a 12-in. main has been laid to the borough boundary, and will be joined-up to a similar main laid by the Rochdale Corporation, so that in case of emergency a supply of gas can be maintained by either undertaking. A similar arrangement has been made with the Middleton Corporation, but this necessitated the laying of only a short length of 6-in. main.

Leeds.

The annual report of the Gas Committee to the Leeds City Council for the year to March last shows a surplus on the twelve months' working of £7,651, which compares with an amount of £27,345 for the preceding year. An effect of high contract prices for coal is seen in a big decrease in the quantity of coal carbonized, and a correspondingly heavy increase in the amount of imported gas oil that has had to be used. Actually the quantity of gas oil used was 547,031 gallons, or an increase on the previous year of 469,350 gallons. Consumption through prepayment meters increased from 928,265,000 cu.ft. to 986,900,000 cu.ft.; while the quantity used for central heating was nearly 50,000,000 more, at 133,330,000 cu.ft. Public lamp consumption, too, is up nearly 20,000,000 cu.ft., at 411,152,000 cu.ft. The total estimated gas sold was 3,186,801,000 cu.ft.—an increase over the previous year of 58,012,000 cu.ft., or 1·85%. A decrease of some £5,000 in the receipts for coke is accounted for by the reduced quantity of coal carbonized and a reduction in the price obtained for coke for shipment. The quantity of crude benzole produced per ton of coal carbonized was: Vertical retorts, 2·4 gallons; horizontal and inclined retorts, 3·5 gallons. The report remarks that "under most headings there is a decrease in the number of appliances on hire, but this does not necessarily mean an actual decrease in the number in use. Under the system of payment for appliances supplied with automatic meters, and the substitution of hire-purchase for simple hire by ordinary consumers, 13,619 appliances have become the property of the consumer, which is an incentive for their retention, and will lead to a larger consumption of gas." There has been much activity in the industrial department, and the demonstration rooms continue to be used by engineers and manufacturers to try out new processes—resulting in orders being obtained for additional gas-fired appliances. The price of gas has remained unchanged during the year.

Lincoln.

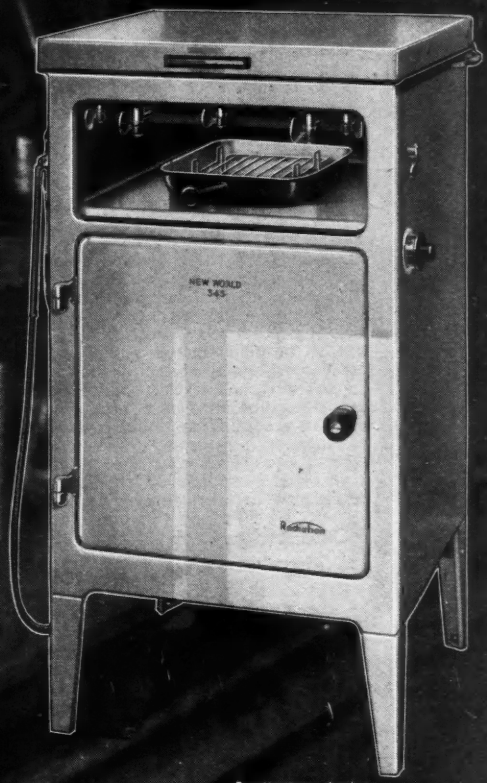
Increased coal charges and their effect are referred to in the report for the year to March on the City of Lincoln Corporation Gas Department. It appears that an increase of £5,604 is due to the increased charges payable for coal—a sum nearly sufficient to wipe out the previous year's net profit of £5,750. On the present occasion the net profit is £306. The outstanding debt on the undertaking at March 31 was £177,976, as against which the total capital expenditure amounts to £489,406. The gas production for the year was just over 834¼ million cu.ft., by far the largest output in the history of the undertaking, and an increase of approximately 6¼% on the production of the previous year. The total increase for the past ten years has been no less than 316 million cu.ft., which is equivalent to 61%. While the industrial load has been mainly responsible for this, the number of domestic consumers continues to show steady progress—due in a large measure to the modern appliances available on easy hire-purchase terms. There are now 19,955 domestic consumers. Sulphate of ammonia was in such good demand that the whole output and stock has been disposed of. Rising costs made it necessary, as from April 1 this year, to increase gas charges to ordinary consumers 3d. per 1,000 cu.ft.; the industrial price having been previously increased 4d. per 1,000 cu.ft., due to the operation of the Coal Clause. The storage capacity having been reduced to twelve-hours' supply, it was decided to erect a new holder of 3 million cu.ft. capacity.

Southport.

A small increase is shown in the quantity of gas consumed in the area of supply of the County Borough of Southport Gas Department during the twelve months ended March last—the amount having been 870,925,200 cu.ft., as compared with 869,127,200 cu.ft. in the preceding year, an increase of 1,798,000 cu.ft. Of this amount, 59·62% was registered by ordinary meters, and 28·13% by prepayment meters, the remaining 12·25% having been used in public lamps, &c. The net profit on the twelve months' working is £9,938, which compares with £21,367 a year ago. The average price received for all gas supplied was a trifle lower in the period under review than in the previous year. From the amount available after adding the balance brought forward, the sum of £2,880 has been transferred in aid of rates, and another payment is "Private Gas Enquiry, 1938, £1,316." On the subject of coal, the report says: "There is still no change in the policy of the Selling Organizations, and contract renewal prices continued to show increases up to 6s. 1d. per ton over the prices which obtained in 1935. We have, however, recently received offers for contract renewals at the same prices that obtained twelve months ago, which would appear to indicate that the price of coal has reached its peak." Some difficulty is being experienced in maintaining coke prices, but it is hoped that the newly-formed Lancashire and District Coke Association will have the desired effect of stabilizing prices and promoting sales throughout the area. As from June of this year, the price of gas has been increased by 3d. per 1,000 cu.ft. The quantity of gas used for public lighting continues to increase.

Radiation

MAKERS OF HIGHEST QUALITY COOKERS



Radiation Ltd.

TRADE NEWS

What the manufacturers are doing by way of new and improved appliances, plant, and processes.

Truck Mounted Compressors and Exhausters.

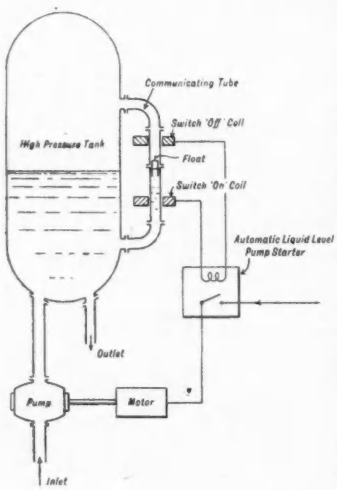
The current issue of the *Broomwade News Bulletin* for May-June deals with truck-mounted air compressor and exhauster plants. These are stated to be invaluable for municipal authorities and gas and other undertakings for dealing rapidly with such duties as tank filling, gully emptying, and repairing or cleaning gas mains. They are built in many types and sizes by Messrs. Broom & Wade, Ltd., High Wycombe, publishers of the *Bulletin*.

British Thermostat Co. : Birmingham Representation.

The British Thermostat Company, Ltd., announce that Mr. M. A. Jane, A.M.I.Mech.E., has been appointed to take charge of their new Birmingham office at Essex House, 27, Temple Street, Birmingham, 2. Mr. Jane, who has been with the Company at Sunbury-on-Thames for many years, is well known to large numbers of heating, air-conditioning, and refrigeration engineers, and the Birmingham office will be able to handle direct all Midland enquiries for automatic control equipment, and will also be the headquarters of the Company's Midland service engineer.

Automatic Liquid Level Control and Indication.

This new liquid level control equipment is for use with liquids under high-pressure, of any temperature, and for liquids and their gases where it may be dangerous for them to come into contact with atmospheric air — *e.g.*, high-pressure water in hydraulic accumulators (300 atmospheres), liquid air, freon, ammoniac, acids, high explosive mixtures, benzine, ether, naphtha, petrol, &c. The makers are Londex, Ltd., Anerley Road, S.E. 20. From our sketch it will be seen that only a small float of magnetic material floats on the liquid level inside the tank of the communicating tube and no mechanical or other connexion to the outside of the tank is required.



The equipment works on what is claimed to be a new, purely inductive principle, and as soon as the float passes through one of the coils, which are fitted outside the tube in the open air, a pump motor either starts or stops or signals are given according to the position of the float.

The effect is obtained by utilizing the change of impedance of a coil as soon as a magnetic core passes through it. The special a.c. "Londex" relay which is used gives an absolutely safe control of the pump motors and indicators, and, if several coils are used, several pump motors or indicators can be controlled, according to the various levels at which coils are fitted. The equipment can always be used if a body of magnetic material varies its position according to liquid level, liquid flow, gas flow, or gas pressure, as, for instance, if Venturi tubes are used. This new type of liquid level control equipment has been in use for about a year and more than 80 installations have been carried out successfully. No attendance is necessary.

"Cambridge" Automatic Mechanically Operated Regulators.

Regulators described in an illustrated folder recently published by the Cambridge Instrument Company, Ltd., 13, Grosvenor Place, London, S.W. 1, are claimed to give reliable service for all industrial applications where a robust inexpensive form of automatic temperature control is required. The thermometer bulbs are made of special steel alloy, but for applications where corrosives are present, the bulbs and capillaries can be covered with lead, copper, or tin; alternatively stainless steel or nickel-plated bulbs can be supplied. The capillary tube used is of a patented construction that renders unnecessary any form of compensating links for temperature changes in the capillary.

Messrs. George Wilson's Dundee Premises.

Messrs. George Wilson (Gas Meters), Ltd., Coventry, are shortly to open premises in King Street, Dundee, for the manufacture and repair of gas meters.

Streamline "Newhome" Cookers.

A handsome folder has been published by Messrs. Falk, Stadelmann, & Co., Ltd., illustrating and giving particulars of "Newhome" cookers which may be obtained in green and cream, black and white, and French grey-mottled porcelain enamel finishes.

Hopkinsons' Parallel-Slide Valve.

A range of small parallel-slide valves is described in a new leaflet published by Messrs. Hopkinsons, Ltd., Huddersfield. These valves have been introduced to provide a low-priced, robust, and reliable valve, suitable for controlling flow in both directions. An outstanding feature of the valve is the maintenance of fluid-tightness and ease of operation without any wedging action. No mechanical stress is exerted between the discs and seats, and the valve is not subjected to dangerous strains in opening and closing. A disc spring keeps the discs in close contact with the seats when the valve is not under pressure, and the slide valve action removes any dirt and foreign matter from the faces. The valve sizes vary from ¾ in. to 4 in. in iron or steel. For steam pressures up to 250 lb. the belt spindle is of bronze and of stainless steel for pressures above 250 lb.

Oil-Filled Conveyor Rollers.

Many advantages are claimed for the "Huwood" oil filled conveyor roller. This advance has been made possible by the discovery of a new synthetic product resembling rubber, which is stated to be impervious to the action of oil and acid, is capable of being moulded to any shape, and has a co-efficient of friction of only one-fifth that of the best chrome leather. The seal is unidirectional, having two lips, one acting inwards against the oil and the other outwards against any foreign matter. The roller consists of a hollow steel cylinder mounted on ball bearings and rotating on a mild steel spindle. Through the roller runs a steel tube in which the spindle is completely enclosed, and which is practically filled with oil. High-class ball bearings are fitted at each end of this inner tube and on the outside of these are placed the oil seals already described. By the use of very light end discs, the starting tongue of the conveyor is reduced. There are over 70,000 of these rollers, which are manufactured by Messsrs. Hugh Wood & Co., Ltd., Gateshead-on-Tyne, 11, in successful operation.

Nife Batteries, Ltd.

Nife Batteries, Ltd., Hunt End Works, Redditch, have recently published a guide to A.R.P. auxiliary lighting which is very comprehensive in character, and deals with various methods of providing independent lighting for A.R.P. shelters and trenches, cleansing and first-aid posts, report centres, &c. Copies may be obtained free of charge upon application.

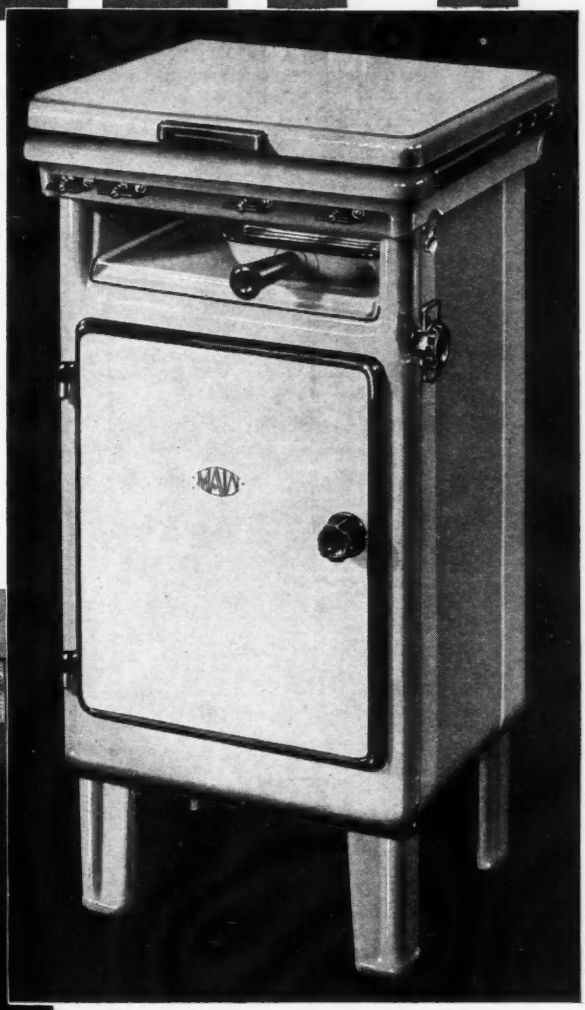
Duct and Immersion Thermostats.

The most recent addition to the series of technical bulletins issued by the British Thermostat Company, Ltd., is Publication No. 354A which deals with thermostats for controlling the temperature of air in the ducts of heating and air-conditioning installations, for controlling the temperature in rooms, cold chambers and drying ovens, and for use as immersion thermostats in vessels containing liquids.

These thermostats operate on the vapour-pressure principle and are provided with phial and capillary tube. Two models are described, Type YM1 which has silver contacts and is housed in a bakelite case, and Type K5 which is a heavy-duty instrument with 15 ampere mercury-tube switch and die-cast metal case.

Another noteworthy feature of the bulletin is the very complete

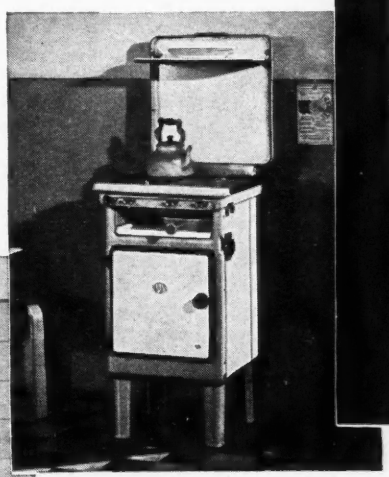
VARIETY

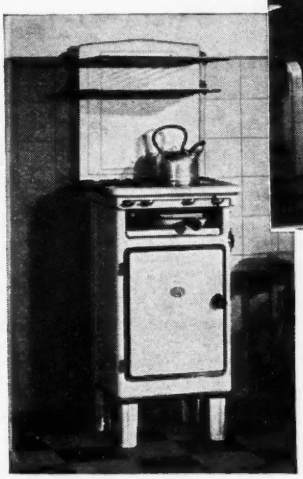


There are now four members of the distinguished 'Streamlined" family, two of which are mounted on high stands. Each size has a "strong supporting cast," including the Hinged Cover, with or without Folding Shelf, the standard Main Plate Racks and Backplates, and that "grand star," the "P.R." Hot-Closet. The most recent members, the No. 528 and No. 529 Cookers, have extended hotplates with four boiling burners and a high-speed griller.

The illustrations from left to right show :—

1. The 527 De Luxe Cooker with Enamelled Double Plate Rack and Backplate.
2. The 526 Dapple Cooker with Hinged Cover incorporating Folding Shelf
3. The 527 De Luxe Cooker with Hinged Cover closed





MAIN

"STREAMLINED" GAS COOKERS

In Ivory and Black or Grey Dapple Enamel

★★★★R. & A. MAIN LTD. LONDON AND FALKIRK★★★★

series of installation and service instructions included. These will be of great value to consultants and supervising engineers, as they are identical with the service instructions issued with every instrument. There are also practical notes on methods of fixing the thermostat phials, with photographs of four alternative arrangements—namely, a circular flange, an immersion sleeve, a split flange and grommet, and a gland nut, and also a sketch showing how stand-off phial clips can be arranged.

Smiths' Hearths and Blowing Fans.

We have received from Messrs. Keith Blackman, Ltd., a copy of their latest catalogue, No. V.97, giving particulars and illustrations of smiths' hearths and blowing fans. The Keith Blackman fans in this list are more especially designed for the many industrial processes which require a continuous service of air at moderately high pressures. These fans are particularly suitable for providing blast to individual, or groups of, smiths' hearths and various types of fire; also for supplying clean air to sewage pump chambers; ejecting gases from fume cupboards; testing gas meters; cooling confectionery; drying casks and bottles; and blowing dust from electrical and other machinery. Fans can be supplied with hearths complete, or for attachment to existing plant, and are of a very substantial build, having casings of close grained cast iron, the impellers being of mild steel with cast iron centres and accurately balanced dynamically to ensure true running.

B.T.C. Magnetic Valves.

Solenoid-operated valves find a wide range of application in small-power engineering, and particularly in the refrigeration, heating, and air-conditioning industry. Typical applications are for governing the flow of liquid refrigerants in cooling plants, gas or oil fuel, and combustion air in boiler installations, and water or steam in humidifying plants at the dictate of a thermostat, pressure-'stat or humidistat, or other automatic switch.

The British Thermostat Company, Ltd., Windmill Road, Sunbury-on-Thames, have issued a revised bulletin No. 351A describing standard "Teddington" magnetic valves for gas, water, steam, and oil. Full specifications, with ratings, performance data, and weights and dimensions in British and metric units are given of magnetic gas valves up to 2 in. diameter, and of water, steam, and oil valves up to ½ in. diameter. With the exception of the smallest gas valves, which are suitable for a.c. circuits only and consume 8 watts, the valves are available for a.c. or d.c. operation at all standard supply voltages between 100 and 250 volts. The normal current consumption is 18 watts d.c. or 16 watts a.c. A few of the larger gas valves can, however, be fitted with a double coil for use on high pressures, when the power consumption is, of course, doubled.

The "Duoflam" Reference Book.

The principle of combustion of "Duoflam" burners provides, as most of our readers are aware, for the introduction of secondary air above the gas orifice in the jet tubes. As the primary mixture leaves each pair of jets, a vacuum is created which draws into the flame the additional air required to develop perfect combustion. A handsome brochure dealing with the principle and application of the "Duoflam" burner has been published by Messrs. Arthur Docking & Co., Radiant Works, Harmood Street, London, N.W. 1. This burner, the brochure states, is recognized by scientists and heating engineers as being the foremost method of to-day, due to the fact that it develops a flame temperature of 1,900° F. with 500 B.Th.U. gas at pressures as low as 15 to 20 tenths. Thus large volumes of heat can be applied in confined spaces without the aid of fans, boosters, or pressure. The burner needs no adjustment, regardless of gas pressure or calorific value and has a turn-down range of 95% with absolute safety. It is, therefore, claimed to be ideal for thermostatic control.

Crossley Oil and Diesel Engines.

Interesting pumping installations now in the shops of Messrs. Crossley Brothers, Ltd., Openshaw, Manchester, include the following: One Crossley four-cylinder horizontal enclosed type heavy oil engine, 104 b.h.p., for the Borough of Ryde, Isle of Wight, direct-coupled to a Mather & Platt pump. One Crossley three-cylinder horizontal oil engine, 78 b.h.p., for a Royal Ordnance Factory, direct coupled to a Worthington-Simpson pump. Three Crossley twin-cylinder horizontal heavy oil engines totalling 270 b.h.p. for Manchester Ship Canal Company, Eastham Locks, driving Mather & Platt "Plurovane" high-lift pumps through Vulcan-Sinclair couplings and David Brown gears. Four Crossley six-cylinder vertical diesel engines, pressure-charged totalling 1,600 b.h.p., for London County Council, Earl Pumping Station, driving Gwynnes horizontal storm water pumps through Bibby couplings. Also included are three Crossley vertical high-speed diesels for driving compressors and exhausters.

Markets and Manufactures

Current Sales of Gas Products

The London Market

July 17.

There are no changes to report in the values of Tar Products in the London market, present prices being as follows:

Pitch, nominal at about 25s. to 26s. per ton f.o.b.

Creosote, about 3½d. to 3¾d.

Refined tar, 3¾d.

Pure toluole, about 2s. 5d. to 2s. 6d.

Pure benzole, about 1s. 9d.

95/160 solvent naphtha, 1s. 7d. to 1s. 8d.

90/160 pyridine, about 11s.

All per gallon naked at makers' works.

The Provinces

July 17.

Crude Gas-Works Tar, 10s. to 15s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 25s. to 27s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 25s. to 27s.* Toluole, naked, North, 1s. 10d. to 1s. 11d. Coal tar, crude naphtha, in bulk, North 7¾d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 5d. Heavy naphtha, North, 1s. 2½d. to 1s. 3d. Creosote, *ex* works, in bulk, North, liquid and salty, 3⅞d. to 4⅛d.; low gravity, 4d. to 4¼d. Carbolic acid, 60's, 1s. 7d. to 1s. 10d. Naphthalene, £13 10s. to £16. Salts, 70s. to 75s., bags included. Anthracene, "A" quality, 4¼d. to 4¾d. per minimum 40% purely nominal; "B" quality unsaleable. Heavy oil: Unfiltered anthracene oil, min. gr. 1,080, 4¾d. to 4⅞d.; filtered anthracene oil, min. gr. 1,080, 5¼d. to 5⅜d.; heavy tar oil, gr. less than 1.080, 4½d. to 4¾d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls, whatever they may be.

Scotland

GLASGOW, *July* 15.

There is little change to report from last week and, with the approach of local holidays, business is fairly quiet and prices remain unchanged.

Crude gas-works tar.—Actual value is 28s. to 30s. per ton *ex* works in bulk.

Pitch of vertical quality can be obtained at about 20s. to 21s. per ton f.o.b. for export and 20s. per ton *ex* works in bulk for home trade.

Refined tar.—Road deliveries continue to look after production and prices are 3¾d. to 4d. per gallon. There is not a great deal being done on the export side with quotations at 2¾d. to 3d. per gallon, into buyers' packages at makers' works.

Creosote oil.—There is a steady throughput in this material and quotations are as follows: Specification oil, 3½d. to 3¾d. per gallon; low gravity, 4¼d. to 4½d. per gallon; neutral oil, 3¾d. to 4d. per gallon; all *ex* works in bulk.

Cresylic acid.—This product remains dull although there are a few enquiries on the market and prices are at the following levels: Pale, 97/99%, 1s. 2d. to 1s. 3d. per gallon; dark, 97/99%, 1s. to 1s. 1d. per gallon; pale, 99/100%, 1s. 4d. to 1s. 7d. per gallon; all *ex* works in buyers' packages.

Crude naphtha.—What quantities are available are being sold at round 5d. to 5¼d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade is 1s. 4d. to 1s. 5d. per gallon and 90/190 heavy naphtha about 1s. 1½d. to 1s. 2d. per gallon.

Motor benzole is 1s. 3d. to 1s. 4d. per gallon.

Pyridine.—Prices are nominal with 90/160 grade 10s. to 10s. 6d. per gallon and 90/140 grade at 12s. to 13s. per gallon.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

		s.	d.		s.	d.			
Crude benzole..		0	9½	to	0	10	per gall.	at works	
Motor	„ ..	1	3	„	1	3½	„	„	„
90%	„ ..	1	4	„	1	4½	„	„	„
Pure	„ ..	1	8	„	1	8½	„	„	

Contracts Advertised To-Day

Gasholder.
Doncaster Gas Department. [p. 186.]

Repairs to Gasholder.
Colwyn Bay Gas Department. [p. 186.]

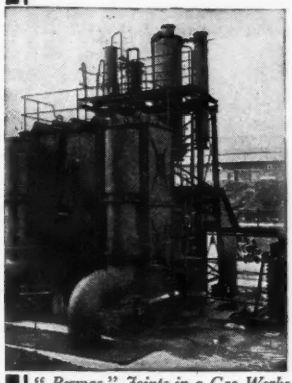
Water Gas Plant.
Colwyn Bay Gas Department. [p. 186.]

Winser and Rochester Gas Lanterns.
Hornchurch Surveyor's Department. [p. 186.]

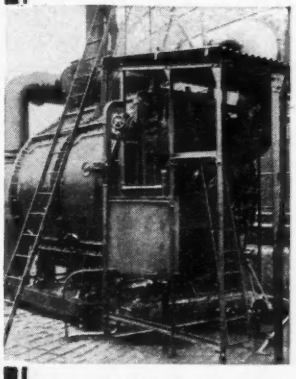
Dividend Announcement

Falk, Stadelmann.—The Directors of Falk, Stadelmann, & Co., Ltd., announce that they are recommending at the forthcoming Annual General Meeting a dividend of 6% actual, less tax, on the Ordinary shares on account of the year ended March 31, 1939. Last year's dividend was 10%.

25 Years' Hard!



"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.

Ever since 1913 "PERMAC," the original Metal-to-Metal Jointing, has been holding up difficult joints like these in important Gas Works and on Coke Oven Plants all over the world. Equally suitable for any joint—steam, water, gas, oil — screw pipe or flange.

Send for particulars

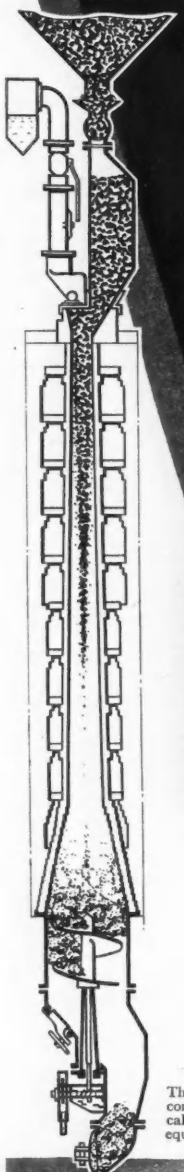
Permac
METAL-TO-METAL JOINTING MATERIAL

Sole manufacturers:—

THOMAS & BISHOP LTD.
37, Tabernacle St.
LONDON, E.C. 2

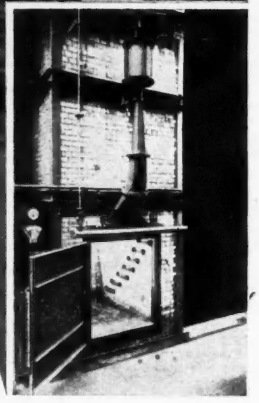
Telephone: Clerkenwell 3351 (2 lines)

WEST'S



Three installations of Glover-West vertical retorts, with coke-grading and waste-heat recovery equipment, at the Cottesloe gasworks of the Johannesburg Municipal Gas Department, and *(below)* step-grate producer equipped with steam-jet air injector to facilitate the burning of small coke and breeze under pressure—a view in the Glover-West vertical retort house at the Meadow Lane works of the Leeds Corporation Gas Department.

Carbonizing Plants



- Increased capacity in relation to ground area covered.
- Output readily adjustable to meet fluctuating demands.
- High yields of gas and coke with low maintenance costs.
- Clean working conditions within the retort house.
- Modern building design and smokeless operation.

WEST'S GAS IMPROVEMENT COMPANY, LTD.
MILESPLATTING, MANCHESTER 10 & COLUMBIA HOUSE, ALDWYCH, W.C.2

The Glover-West continuous vertical retort and equipment.

Glover-West Vertical Retorts
AND WESTVERTICAL CARBONIZING CHAMBERS

434 PLANTS BUILT OR ORDERED IN 24 COUNTRIES

GAS STOCKS AND SHARES

The brighter tone seen in markets during the previous period continued in evidence last week, and more activity was reported in most sections. Gilt-edged stocks reacted on Friday after Sir John Simon's announcement of the coming £350,000,000 Defence Loan, but a late recovery set in and much of the early loss was made good. Home rails were stimulated by further favourable traffic returns, though profit-taking led to some weakness in prices at the close. Industrials with few exceptions showed improvement on the week and several mining shares also strengthened, but rubbers continued dull.

The Gas market was comparatively well supported, but prices, where changed, were all in a downward direction—a few losing heavily. In the Official List, Shrewsbury reacted no less than 28½ points to 115, business being recorded during the week at 113-114. Lea Bridge dropped 10 points to 140, though in view of the offer of the South Eastern Gas Corporation, particulars of which as they affect this Company and the Hornsey Gas Company appear elsewhere in this issue, this drop appears hardly justified.

A few reactions occurred on the Provincial Exchanges, including a fall of 3½ in Sunderland 6%, while in the Supplementary List the nominal quotations of Oxford and Wakefield stocks were also marked down.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last. Hf. Yr. % p.a.	NAME.	Quotations July 14.	Rise or Fall on Week.
1,767,439	Mar. 6	8	8	Alliance & Dublin Ord. ...	130—140	...
374,000	June 19	4	4	Do. 4 p.c. Deb. ...	88—93	...
877,576	May 8	5	5	Asscd.Gas& WaterU'd'tsOrd.	16/—18/—	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/—	...
535,545	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	17/—19/—	...
318,730	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	16/—18/—	...
750,000	Mar. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	92—97	...
560,070	Feb. 20	7	7	Barnet Ord. 7 p.c.	150—160	...
300,000	Apl. 6	1/4½	1/9½	Bombay, Ltd.	19/—21/—	...
181,185	Feb. 20	9½	9½	Bournemouth sliding scale	185—195	...
690,526	,,	7	7	Do. 7 p.c. max. ...	153—158	...
493,960	,,	6	6	Do. 6 p.c. Pref. ...	125—130	...
50,000	June 5	3	3	Do. 3 p.c. Deb. ...	70—75	...
362,025	,,	4	4	Do. 4 p.c. Deb. ...	95—100	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	110—115	...
357,900	Feb. 20	7½	7½	Brighton, &c., 6 p.c. Con. ...	133—138	...
659,955	,,	6½	6½	Do. 5 p.c. Con. ...	118—123	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref.	110—115	...
855,000	Mar. 20	7	8	British Ord.	100—110	...
100,000	June 19	7	7	Do. 7 p.c. Pref.	136—141	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	June 5	4	4	Do. 4 p.c. Red. Deb. ...	92—97	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	98—103	...
450,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
100,000	22 May '33	6	4	Cape Town, Ltd.	¼—1½	...
100,000	6 Nov. 33	4½	4½	Do. 4½ p.c. Pref. ...	1—2	...
150,000	June 19	4½	4½	Do. 4½ p.c. Deb. ...	58—68	...
626,860	Feb. 6	6	6	Cardiff Con. Ord.	112—117	...
237,860	June 5	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...
98,936	Mar. 20	2/—	2/—	Colombo Ord.	1 7/16—1 7/16	...
24,510	,,	1/4½	1/4½	Do. 7 p.c. Pref. ...	22/—24/—	...
739,453	Mar. 20	—/11.48	—/11.48	Colonial Gas Assn. Ltd. Ord.	16/—18/—	...
296,144	,,	1/3.30	1/3.30	Do. 8 p.c. Pref. ...	23/—25/—	...
1,775,005	Jan. 23	5	4	Commercial Ord.	53—58	...
140,000	Feb. 6	§13/4	4	Do. 4 p.c. Red. Pref. ...	95—100	...
620,000	June 5	3	3	Do. 3 p.c. Deb. ...	59—64	...
286,344	Feb. 20	5	5	Do. 5 p.c. Deb. ...	105—110	...
200,000	,,	§8	4	Do. 3½ p.c. Red. Deb	95—100	...
807,560	Feb. 20	7	7	Croydon sliding scale ...	123—128	...
644,590	,,	5	5	Do. max. div.	94—99	...
620,385	June 19	5	5	Do. 5 p.c. Deb. ...	107—112	...
239,000	Feb. 6	5	5	East Hull Ord. 5 p.c.	88—93	...
187,215	Feb. 6	6	6	East Surrey Ord. 5 p.c. ...	102—107	...
176,211	June 5	5	5	Do. 5 p.c. Deb....	105—110	...
250,000	July 3	4	8	Gas Consolidation Ord. 'B' ...	18/6—20/6*	...
250,000	May 22	4	4	Do. 4 p.c. Red. Cum. Pref.	17/—19/—	...
19,189,963	Feb. 6	5½	5½	Gas Light & Coke Ord. ...	20/6—21/6d	...
2,600,000	,,	3½	3½	Do. 3½ p.c. max. ...	68—73	...
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref. ...	88—93	...
2,993,000	July 3	3½	3½	Do. 3½ p.c. Red. Pref. ...	90—95*	...
8,602,497	May 22	3	3	Do. 3 p.c. Con. Deb....	70—75	...
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb....	105—110	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	102—107	...
700,000	Mar. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95	...
270,466	Feb. 20	6	6	Harrogate New Cons. ...	93—103	...
157,500	Mar. 20	‡1/—	‡1/—	Hong Kong and China Ord. ...	1—1½	...
213,200	Feb. 6	5½	6	Hornsey Con. 3½ p.c....	93—98	...
5,600,000	May 8	8	12	Imperial Continental Cap. ...	108—118	...
172,810	Jan. 23	3½	3½	Do. 3½ p.c. Red. Deb. ...	87—92	...
235,242	Mar. 6	8½	8½	Lea Bridge 5 p.c. Ord. ...	135—145	—10
63,480	June 19	3	3	Maidstone 3 p.c. Deb. ...	57—62	...
45,000	May 22	†10	†10	Malta & Mediterranean ...	125—130	...
				Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	98—103	...
392,000	Apl. 6	5½	5½			
231,977	Feb. 20	5	5	M.S. Utility 'C' Cons. ...	95—100	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref. ...	83—88	...
390,076	June 19	4	4	M.S. Utility 4 p.c. Deb. ...	90—95	...
148,955	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...
125,000	July 3	3½	3½	Do. 3½ p.c. Red. Bds.	92—95*	...
675,000	May 8	†6	†3	Montevideo, Ltd.	55—65	...
250,000	Mar. 6	7½	7½	North Middlesex 6 p.c. Con.	135—140	...
396,160	Feb. 6	5	5	Northampton 5 p.c. max. ...	103—108	...
300,000	April 24	†9	†7	Oriental, Ltd.	135—145	...
468,537	June 5	7½	8	Plymouth & Stonehouse 5 p.c.	112—117	—2½
621,667	Feb. 20	8¼	8¼	Portsmouth & Gosport Cons.	135—145	...
241,446	,,	5	5	Do. 5 p.c. max. ...	97—102	...
73,350	,,	5	5	Do. 5 p.c. Pref. ...	102—107	...
75,000	,,	4	4	Do. 4 p.c. Pref. ...	82—87	...
114,000	Feb. 6	5	5	Preston 5 p.c. Pref.	102—107	...
247,966	June 19	4	4	Primitiva 4 p.c. Cons. Deb. ...	95—100	...
625,959	Jan. 9	4	4	Do. 4 p.c. Red. Deb. ...	94—99	...
15,000	Mar. 6	6	6	San Paulo 6 p.c. Cum. Pref. ...	7½—8½	...
441,275	May 8	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	18/6—20/6	—1/6
460,810	Mar. 20	—/10½	—/10½	,, ,, 4½ p.c. Cum. Pref.	19/—21/—	...
133,201	Mar. 6	8½	5	Shrewsbury 5 p.c. Ord. ...	110—120	—28½
9,000	June 5	‡4	‡4	South African Ord.	4—5	...
1,371,752	April 24	1/2½	1/2½	South East'n Gas Cn. Ld. Ord.	20/6—22/6	...
871,636	Mar. 6	—/10½	—/10½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/—	...
498,818	,,	4	4	Do. 4 p.c. Cum. Pref. ...	17/—19/—	...
450,000	Feb. 6	4	4	Do. 4 p.c. Deb.	95—100	...
150,000	,,	3½	3½	Do. 3½ p.c.Red. Deb. ...	90—95	...
6,709,895	Feb. 6	5	6	South Met. Ord.	81—86	—1
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	118—123	...
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	84—89	...
1,895,445	June 19	3	3	Do. 3 p.c. Deb.	68—73	...
1,000,000	Jan. 9	5	5	Do. 5 p.c. Red. Deb. ...	105—110	...
600,000	,,	§31/—	3½	Do. 3½ p.c. Red. Deb. ...	93—98	...
1,543,795	Jan. 23	6	6	South Suburban Ord. 5 p.c. ...	103—108	...
512,825	,,	5	5	Do. 5 p.c. Pref.	103—108	...
500,000	,,	4	4	Do. 4 p.c. Pref.	85—90	...
250,000	,,	3½	3½	Do. 3½ p.c. Red. Pref. ...	90—95	...
888,587	June 5	5	5	Do. 5 p.c. Deb.	107—112	...
250,000	,,	4	4	Do. 4 p.c. Deb.	89—94	...
200,000	Feb. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95	...
427,859	Apl. 6	9½	1/2½	S.Western Gas &Water Ord. ...	15/—17/—	...
160,523	Apl. 6	—/10½	—/10½	Do. 4½ p.c. Red. Cum. Pf.	18/6—20/6	...
110,000	June	4	4	Do. 4 p.c. Red. Deb. ...	92—97	...
750,541	Feb. 6	5	5½	Southampton Ord. 5 p.c. ...	102—107	...
148,836	June 5	4	4	Do. 4 p.c. Deb.	89—94	...
350,000	Feb. 6	5½	5½	Swansea 5½ p.c. Red. Pref. ...	104—109	...
200,000	June 19	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
1,076,490	Feb. 20	6½	6½	Tottenham and District Ord.	110—115	...
409,835	,,	5½	5½	Do. 5½ p.c. Pref.	110—115	...
62,235	,,	5	5	Do. 5 p.c. Pref.	102—107	...
453,380	June 19	4	4	Do. 4 p.c. Deb.	87—92	...
85,701	June 5	6	6	Tuscan 6 p.c. Red. Deb. ...	95—100	...
1,131,550	May 8	4	6	U. Kingdom Gas Cor. Ord. ...	15/6—17/6	...
1,051,280	May 8	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	17/—19/—	...
762,241	,,	4	4	Do. 4 p.c. 1st Red. Cum. Pf.	18/—20/—	...
745,263	June 5	4½	4½	Do. 4½ p.c. 2nd Non-Cum.Pf.	13/6—15/6	...
1,066,186	Mar. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	92—97	...
378,106	Mar. 6	7	7	Uxbridge, &c., 5 p.c.	120—125	...
133,010	,,	5	5	Do. 5 p.c. Pref. ...	102—107	...
1,371,138	Jan. 23	7	7	Wandsworth Consolidated ...	110—115	...
2,525,768	,,	4	4	Do. 4 p.c. Pref. ...	83—88	—1
1,343,964	June 19	5	5	Do. 5 p.c. Deb. ...	107—112	...
383,745	,,	4	4	Do. 4 p.c. Deb. ...	89—94	...
400,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	92—97	...
558,342	Feb. 6	6½	6½	Watford and St. Albans Ord.	112—117	...
200,000	,,	5	5	Do. 5 p.c. Pref. ...	102—107	...
200,000	,,	5½	5½	Do. 5½ p.c. Pref. ...	108—113	...
200,000	,,	§16/8	4	Do. 4 p.c.Rd.Pf.(1973/8) .	93—98	...
100,000	—	—	—	Do. 4 p.c.Red.Pf.(1959)	97—102	...
200,000	June 19	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
200,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	83—88	...

a.—The quotation is per £1 of Stock. * Ex. div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Cont.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations July 14.	Rise or Fall on Week.
202,152	Mar. 20	5	5	Ascot Ord.	97—102	−2
128,182	July 3	5	5	Do. 5 p.c. Pref. ...	101—106*	...
31,035	Mar. 20	−/4'	−/4'	Associated Utilities 4 p.c. Pref.	15/-—17/-	...
100,000	June 19	3½	3½	Do. 3½ p.c. Red Deb. ...	93—98	...
17,000	Feb. 20	8	8	Bognor Orig. Ord. 'A' ...	140—150	...
62,210	,,	8	8	Do. New Add. 'A' ...	140—150	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	135—145	...
37,440	Feb. 6	10	10	Cam. Univ. & Town 10 p.c.max.	165—175	...
125,970	,,	7	7	Do. 7 p.c. max	115—125	...
39,025	,,	5	5	Do. 5 p.c. max.	95—100	...
96,410	Feb. 6	4½	4½	Cardiff 4½ p.c. Pref.	93—98	...
150,000	Feb. 20	4	4	Croydon 4 p.c. Pref. ...	91—96	...
130,000	June 19	4	4	Do. 4 p.c. Deb.	90—95	...
65,000	Mar. 6	7½	7⅞	Eastbourne 'A' 5 p.c. ...	122—132	...
198,000	,,	6	6⅜	Do. 'B' 3½ p.c.	105—115	...
112,312	,,	5	5	Do. 5 p.c. Pref.	102—107	...
130,000	June 19	5	5	Do. 5 p.c. Deb.	105—110	...
24,000	Feb. 20	8⅜	8⅜	Gt. Yarmouth 8½ p.c. max. (£30)	25—30	...
59,400	,,	7½	7½	Do. 7½ p.c. max. (£30) ...	27—32	...
51,160	June 5	5⅓	5⅓	Do. 5½ p.c. Deb.	115—120	...
152,600	Feb. 20	8	9	Guildford Cons.	150—160	...
54,055	,,	5	5	Do. 5 p.c. Pref.	102—107	...
68,250	June 5	5	5	Do. 5 p.c. Deb.	103—108	...
156,600	Feb. 20	7	7	Hampton Court Cons. ...	103—113	...
80,000	Mar. 6	4	4	Lea Bridge 4 p.c. Pref. ...	82—87	...
60,000	,,	6	6	Do. 6 p.c. Pref.	118—123	...
94,876	June 5	4	4	Do. 4 p.c. Deb.	87—92	...
73,620	Mar. 6	8¾	8¾	Luton Cons. 'A'	150—160	...
107,960	Mar. 20	4	5⅓	Mid Kent Ord. (£10)	8½—9½	...
230,940	Feb. 6	10	10	Oxford & District Ord. ...	162—172	−3
47,112	,,	5	5	Do. 5 p.c. Pref.	98—103	−4
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	108—113	...
126,193	May 8	7½	7½	Peterborough Ord.	134—139	...
64,990	Mar. 6	7⅓	7⅓	Redditch Ord.	115—125	...
166,850	Feb. 6	8	8	Romford Ord.	137—142	...
60,000	,,	4	4	Do. 4 p.c. Pref.	97—102	...
44,000	Mar. 20	5	5	Do. 5 p.c. Deb.	107—112	...
25,570	Feb. 6	5½	5½	Rugby 5½ p.c. Pref. ...	118—123	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	103—108	...
42,750	June 5	5½	5½	Do. 5½ p.c. Deb.	113—118	...
110,950	Feb. 20	8	8	Ryde Ord.	137—147	...
270,086	Mar. 20	7	7	Slough Ord.	120—130	...
21,000	June 5	5	5	Do. 5 p.c. Deb.	103—108	...
28,872	May 8	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	16/—18/-	...
28,866	Mar. 6	4⅓	4⅓	Do. 4½ p.c. Red. Cum. Pref.	17/—19/-	...
117,228	Feb. 20	5	7	Swindon Cons.	100—105	...
60,425	June 5	5	5	Do. 5 p.c. Deb.	103—108	...
64,380	June 19	5	5	Torquay & Paignton 5 p.c. Pref.	102—107	...
130,000	Feb. 6	5	8	Wakefield Ord.	105—115	−8½
81,650	,,	5	5	Do. 5 p.c. max.	90—95	−2
82,000	Jan. 23	6	6	Weymouth Ord.	101—106	...
98,384	Feb. 6	6	6	Do. 6 p.c. Pref. ...	115—120	...
160,000	June 19	5½	5½	Do. 5½ p.c. Rd.Db.	102—107	...
90,000	June 19	5	5	York 5 p.c. Red. Deb. ...	102—107	...
133,640	Feb. 20	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	115—120	...
120,000	,,	5	5	Do. 5 p.c. Pref.	102—107	...
35,000	June 19	5⅓	5⅓	Do. 5½ p.c. Deb.	110—115	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 14.	Rise or Fall on Week.
347,756	Feb. 6	5	6	Bath Cons.	115—117	...
1,667,250	Feb. 6	5	5	Bristol, 5 p.c. max.	105—108	...
120,420	June 5	4	4	Do. 1st 4 p.c. Deb. ...	96—100	...
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	96—100	...
328,790	,,	5	5	Do. 5 p.c. Deb.	113—116	...
274,000	Feb. 20	5	5	Newport (Mon.) 5 p.c. max. ...	95—97	...
13,200	Mar. 20	7	8⅓	Pontyp'l Gas & W. 10 p.c. 'A'	12⅛—13½	...
13,600	,,	6	5	Do. 7 p.c. 'B' ...	10⅓—11⅛	−⅜
40,000	,,	6	5	Do. 7 p.c. 'C' ...	10⅓—11⅛	−⅜
140,778	Feb. 6	5	5	Weston-super-Mare Cons. ...	103½—105½	...
64,338	June 19	4	4	Do. 4 p.c. Deb. ...	97—99	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb. ...	146—150	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 14.	Rise or Fall on Week.
157,150	Feb. 6	5	6½	Chester 5 p.c. Ord.	107—110	...
92,500	June 5	4	4	Do. 4 p.c. Pref.	94—98	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	86—89	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	96—100	...
2,167,410	Feb. 20	6	6	Liverpool 5 p.c. Ord. ...	115—117	...
245,500	June 19	5	5	Do. 5 p.c. Red. Pref. ...	100—105	...
306,083	Jan. 23	4	4	Do. 4 p.c. Deb. ...	99—101	...
106,280	Feb. 6	10	10	Preston 'A' 10 p.c.	177—187	...
188,219		7	7	Do. 'B' 7 p.c.	129—139	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 14.	Rise or Fall on Week.
122,577	Feb. 20	8	8	Blyth 5 p.c. Ord.	157½—158¼	...
732,000	Feb. 20	3	3	Hartlepool G. & W. Cn. & New	76—78	...
2,061,315	Feb. 6	5	5⅓	Newcastle & Gateshead Con.	20/9—21/3a	−/3
682,856	,,	4	4	Do. 4 p.c. Pref. ...	88—89	...
776,706	June 5	3½	3½	Do. 3½ p.c. Deb. ...	85½—87½	...
277,285	April 24	5	5	Do. 5 p.c. Deb. '43 ...	101—103	...
332,351	Feb. 6	6	6	Sunderland 6 p.c. max. ...	129—131	−3½

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 14.	Rise or Fall on Week.
542,270	Feb. 6	6	9	Derby Con.	132—137	...
55,000	June 19	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	June 19	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
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